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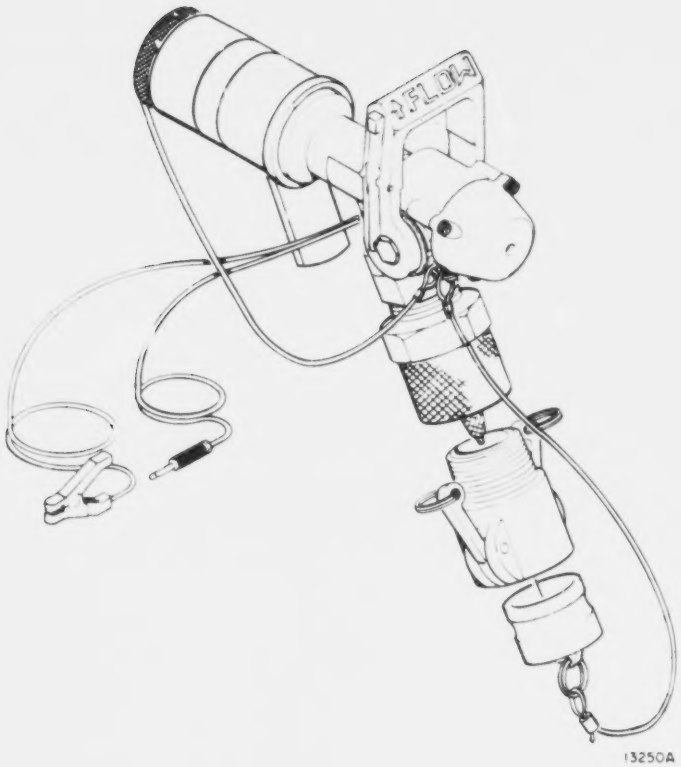
TM5-4930-235-13&P

TECHNICAL MANUAL

OPERATORS, UNIT, AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL AND REPAIR PARTS AND SPECIAL TOOLS LIST



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INTRODUCTION

OPERATING INSTRUCTIONS

OPERATOR MAINTENANCE INSTRUCTIONS

UNIT MAINTENANCE INSTRUCTIONS

INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

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REPAIR PARTS AND SPECIAL TOOLS LIST

COMPONENT OF END ITEM/BASIC ISSUE ITEMS

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CLOSED CIRCUIT REFUELING NOZZLE ASSEMBLY

NSN 4930-01-167-2067

MODEL NUMBER 125-10000

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
16 AUGUST 1988

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WARNING PAGE

WARNING

Ground clip and ground plug must be attached before connecting nozzle to aircraft. Failure to comply can result in severe electric shock and injury or death to personnel.

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted during fueling operations or near refueling areas. Failure to comply can result in injury or death to personnel.

WARNING

Proper eye protection must be worn. Failure to comply can result in loss of eyesight.

WARNING

Cleaning solvent, PD-680-Type II is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection required. Avoid repeated/prolonged contact. Use only in well ventilated areas. Keep away from open flames or other sources of ignition.

WARNING

Calibrating fluid, MIL-C-7024 Type II, is toxic to skin, eyes, and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged contact. Good general ventilation is normally enough.

WARNING

High pressures used during testing may cause rupturing or bursting of faulty hoses. The result could be serious injury. To prevent injury, cover hoses with a suitable safety shield. Be sure pressures are bled off before exposing or touching hoses.

WARNING

Several parts are under spring tension in nozzle subassembly and must be removed slowly to prevent parts from flying out.

WARNING

Paint, MIL-C-46168, is toxic. Use only in a well ventilated area. Read and follow all safety and mixing instructions on containers. Failure to comply can result in injury or death of personnel.

TECHNICAL MANUAL
NO. 5-4930-235-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 16 August 1988

Operators, Unit, and Intermediate Direct Support Maintenance Manual and Repair Parts and Special Tools List

CLOSED CIRCUIT REFUELING NOZZLE ASSEMBLY (125-10000) NSN 4930-01-167-2067)

Current as of 1 August 1988

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished to you.

Approved for public release; distribution is unlimited.

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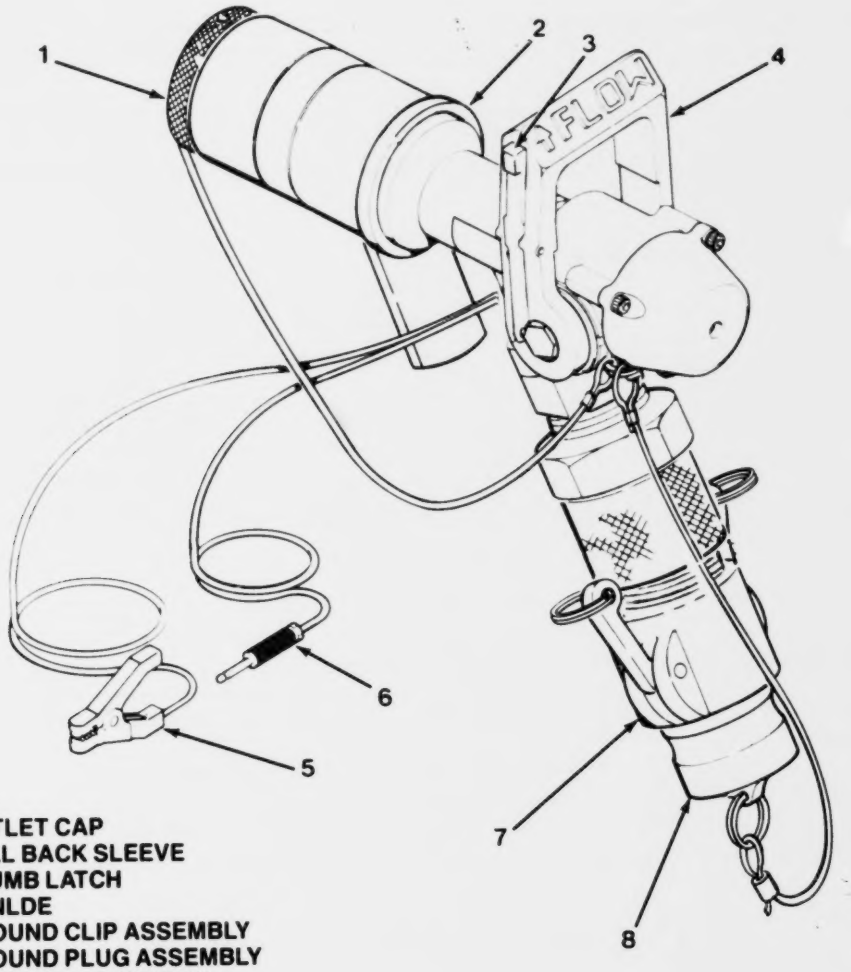
CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope. This is an Operators, Unit, and Intermediate Direct Support Maintenance Manual and Repair Parts and Special Tools List. The manual supports the Closed Circuit Refueling (CCR) Nozzle Assembly, Model Number 125-10000. The nozzle dispenses aviation fuel to aircraft. Throughout this manual the CCR Nozzle Assembly is referred to as the nozzle. (See Figure 1-1.)



1. OUTLET CAP
2. PULL BACK SLEEVE
3. THUMB LATCH
4. HANLDE
5. GROUND CLIP ASSEMBLY
6. GROUND PLUG ASSEMBLY
7. COUPLING ASSEMBLY
8. DUST PLUG

Figure 1-1. Closed Circuit Refueling (CCR) Nozzle Assembly

1-2. Maintenance Forms, Records, and Reports. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. Reporting Equipment Improvement Recommendations (EIR's). If your nozzle needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, ATTN: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished to you.

1-4. Warranty Information. The nozzle is warrantied by Tube-Alloy Corporation for one year. The warranty starts on the date, found in block 23 of DA form 2408-9, in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action through your organizational maintenance shop.

1-5. Destruction of Army Materiel to Prevent Enemy Use. The nozzle shall be destroyed in accordance with TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-6. Preparation for Storage or Shipment. Refer to Chapter 5, Section II Maintenance Procedures.

1-7. Quality Assurance/Quality Control (QA/QC). Refer to TM 55-0411 for appropriate QA/QC information.

1-8. Safety, Care, and Handling.

WARNING

Smoking or open flames are not permitted at or near refueling areas. Aviation fuel is highly flammable. Failure to comply can result in injury or death to personnel.

a. Grounding connectors must be attached before connecting nozzle to aircraft. Failure to comply can result in injury or death to personnel.

b. Do not use a nozzle that is damaged and/or leaking fuel.

c. Keep handle in no flow (off) position when not in use.

d. Keep outlet cap and dust plug in place when not in use. Dirt or contaminants can cause internal damage to the nozzle.

e. Hand-carry nozzle. Do not drag or throw on ground.

f. Keep nozzle body clean. Remove dirt, dust, mud, or moisture with a clean cloth.

Section II. EQUIPMENT DESCRIPTION

1-9. Equipment Characteristics, Capabilities, and Features.

a. Light weight. Can be hand-carried to and from aircraft.

b. Manually operated.

c. Complete nozzle assembly. Includes protective caps and grounding connectors.

d. Will dispense aviation grade jet fuel to aircraft.

e. Outlet will connect to standard aircraft receptacle without use of an adapter.

f. Inlet coupling half connects to standard cam-lock type couplings.

g. Nozzle will not dispense fuel unless connected to aircraft receptacle.

h. Nozzle contains a vacuum break valve to permit easy removal from receptacle.

1-10. Location and Description of Major Components. Refer to Chapter 2, Section I, Description and Use of Operator's Controls and Indicators.

1-11. Equipment Data. (See Table 1-1.)

Table 1-1. Equipment Data

Weight:	
Nozzle Subassembly Only	6.5 pounds (2.95 kg)
Nozzle with Coupling and Outlet Cap	7.0 pounds (4.08 kg)
Dimensions:	
Length with handle in flow position	13-1/4 inches (336.6 mm)
Length with handle in no flow position	13-5/8 inches (346.1 mm)
Height with handle in flow position	6-1/2 inches (165.1 mm)
Height with handle in no flow position	7-1/8 inches (181.0 mm)
Width	4 inches (101.6 mm)
Operating Temperature Range	-30 degrees F to + 180 degrees F (-34.4 Degrees C to 82.2 Degrees C)
Inlet Operating Pressure	0 to 125 psi (0 to 862 kPa)
Outlet Operating Pressure	13 to 18 psi (90 to 124 kPa)

Section III. PRINCIPLES OF OPERATION

Refer to Chapter 2, Section I, Description and Use of Operator's Controls and Indicators.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. Operator's Controls and Indicators. (See Figure 2-1.)

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-2. General.

a. Before you operate the nozzle, perform your before (B) PMCS. Always keep in mind the CAUTIONS and WARNINGS.

b. While you operate the nozzle, perform your during (D) PMCS. Always keep in mind the CAUTIONS and WARNINGS.

c. After you operate the nozzle, perform your after (A) PMCS.

d. If your nozzle fails to operate, troubleshoot with the proper equipment. Report any deficiencies using the proper forms. Refer to DA PAM 738-750.

2-3. Operator PMCS Procedures. (See Table 2-1.)

a. *Item Number Column.* Item numbers in this column shall be listed in the "TM Item Number" column on DA Form 2404 in recording results of PMCS. Items are listed regardless of interval.

b. *Interval Columns.* These columns are headed "B" (before), "D" (during), "A" (after), "W" (weekly), and "M" (Monthly). A dot (.) in the interval column indicates when the PMCS shall occur.

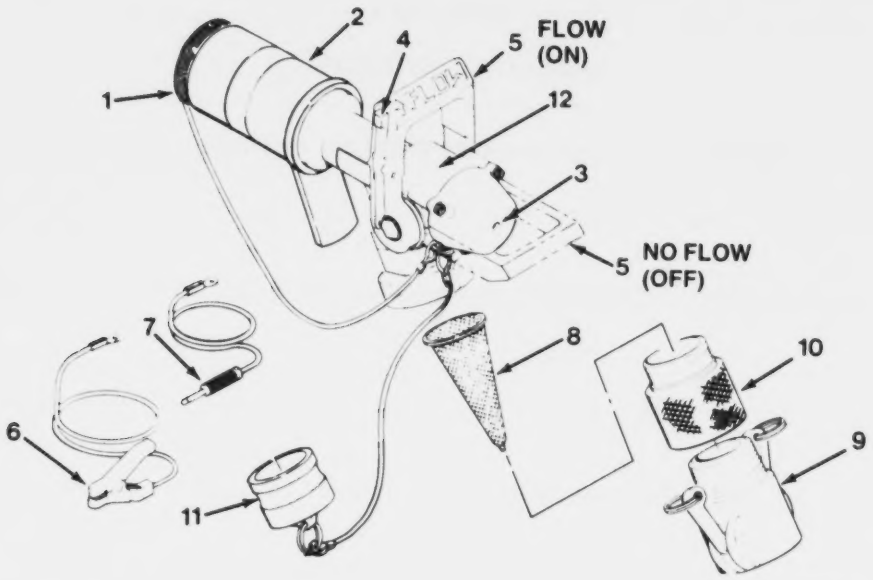
c. *Item to be Inspected Column.* This column lists the item to be inspected.

d. *Procedures Column.* This column describes what must be done to the item.

e. *For Readiness Reporting, Equipment is Not Ready/Available If: Column.* This column contains conditions which would prevent the nozzle from performing its primary function.

NOTE

If nozzle must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.



Key	Control or Indicator	Function
1	Outlet Cap Assembly	Keeps dirt and contaminants out of nozzle.
2	Pullback Sleeve	Pulls back toward handle to release outlet cap or to attach nozzle to aircraft receptacle.
3	Indicator Shaft	Extends from nozzle assembly to indicate full fuel tank. Retracts to indicate flow.
4	Thumb Latch	Locks handle in FLOW (on) or no flow (off) position. Press to move handle; release to lock handle.
5	Handle	Controls flow of fuel. Push forward for FLOW (on). Pull back for no flow (off).
6	Ground Clip Assembly	Clamps to grounding rod near aircraft before connecting nozzle body. Prevents static electric shock, fire hazards.
7	Ground Plug Assembly	Connects to aircraft before connecting nozzle assembly. Prevents static electric shock, fire hazards.
8	Strainer	Prevents damage to nozzle assembly and/or aircraft by removing dirt.
9	Coupling Half	Connects nozzle assembly to fuel hose or dust plug. Pull cam arms outward from coupling half to install. Push cam arms inward towards coupling half to lock.
10	Strainer Body	Must be removed to access strainer.
11	Dust Plug	Keeps dirt and contaminants out of nozzle assembly.
12	Nozzle Assembly	Internally regulates flow of fuel. Has a vacuum break valve in outlet end.

Figure 2-1. Operator's Controls and Indicators

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE: Within designated interval, these checks are to be performed in the sequential order listed.

B-Before D-During A-After W-Weekly M-Monthly

Item No.	Interval					Item to be Inspected	Procedures Check For and Have Repaired or Adjusted	For Readiness Reporting, Equipment is Not Ready/Available if:
	B	D	A	W	M			
1	•	•	•		•	Nozzle Assembly	Check for damaged body, signs of leaks or cracks. (Vacuum break valve moves.)	Outward signs of damage or leakage.
2	•		•		•	Outlet Cap	Check for signs of cracks, loose or frayed cable.	
3	•	•	•		•	Ground Clip Assembly	Check for loose or frayed cable. Check for damage to clip or cable eye. Check screw for tightness.	Outward signs of damage or screw loose.
4	•		•		•	Coupling	Check for signs of cracks, loose or frayed cable. Check to ensure coupling gasket is in place.	Outward signs of damage.
5	•	•	•		•	Ground Plug Assembly	Check for loose or frayed cable. Check for damage to plug or cable eye.	Outward signs of damage.
6	•		•		•	Strainer	Check for damaged and/or dirty screen.	

Section III. OPERATION UNDER USUAL CONDITIONS

2-4. Connection of Nozzle. (See Figure 2-2.)

a. Pull cam arms (1) away from coupling half (2) and remove dust plug (3).

b. Slide end of fuel hose (4) into end of coupling half (2).

c. Push cam arms (1) against coupling half (2).

2-5. Operation of Nozzle.

WARNING

Ground clip and ground plug assemblies must be connected before nozzle is attached to aircraft. Failure to comply can result in severe electric shock and injury or death of personnel.

a. Connect ground clip assembly (5) to grounding rod.

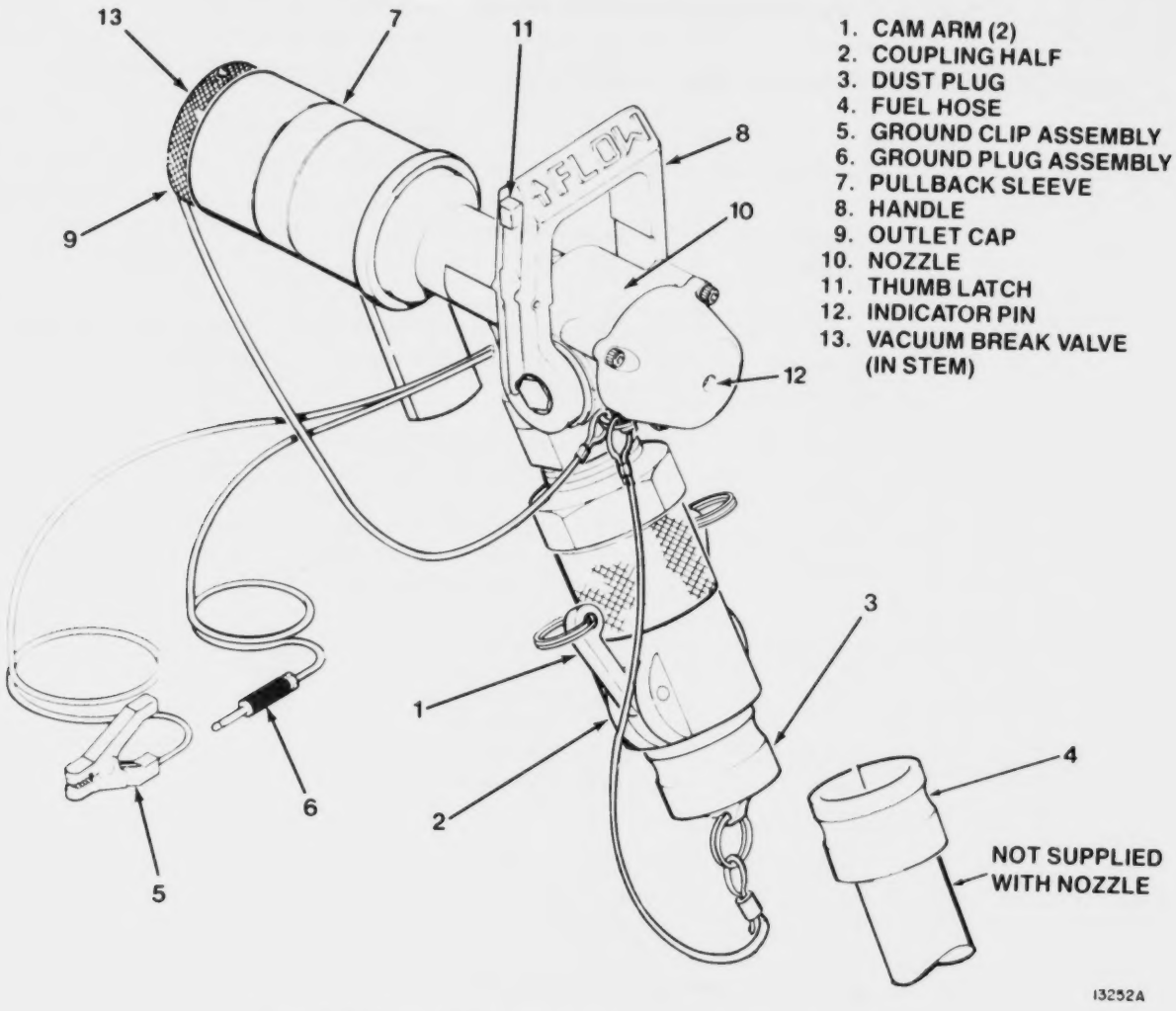


Figure 2-2. Closed Circuit Refueling (CCR) Nozzle Operation

b. Connect ground plug assembly (6) to aircraft.

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted during fueling operations. Failure to comply can result in injury or death to personnel.

c. Wipe around fuel receptacle with a clean cloth (Item 1, Appendix F) to remove dirt or dust.

d. Remove fuel cap from fuel receptacle.

e. Pull pullback sleeve (7) towards handle (8) and remove outlet cap (9).

f. Attach nozzle (10) to fuel receptacle.

g. Press thumb latch (11) and put handle (8) in FLOW (on) position.

h. Operate fuel pump to dispense fuel to aircraft.

i. When fuel tank is full, orange groove in indicator pin (12) will be flush with back of cap. Shut off fuel pump.

NOTE

For multi-refueling operations, fuel pump does not have to be shut off.

j. Press thumb latch (11) and put handle (8) in no flow (off) position.

k. Pull pullback sleeve (7) toward handle (8) and remove nozzle (10) from fuel receptacle.

l. Install fuel cap on fuel receptacle.

m. Wipe outlet cap (9), nozzle (10), and fuel receptacle with a clean cloth (Item 1, Appendix F) to remove dirt, dust, or fuel.

n. Pull pullback sleeve (7) toward handle (8) and install outlet cap (9) in end of nozzle (10).

o. Disconnect ground plug (6) from aircraft.

p. Disconnect ground clip (5) from grounding rod.

q. Wipe exterior of nozzle (12) and cables with a clean cloth (Item 1, Appendix F) to remove dust, dirt, moisture, or fuel.

CAUTION

Do not leave nozzle laying on ground. Failure to comply can result in damage.

r. Place nozzle (10) in storage container away from aircraft.

2-6. Disconnection of Nozzle.

NOTE

A suitable container should be available to catch fuel spillage.

a. Pull cam arms (1) outward from coupling half (2).

b. Remove fuel hose (4) from coupling half (2).

c. Insert end of dust plug (3) in coupling half (2).

d. Push cam arms (1) inward to secure dust plug (3) to coupling half (2).

Section IV. OPERATION UNDER UNUSUAL CONDITIONS.

2-7. Operation Under Unusual Conditions. Operating instructions under usual conditions are acceptable; however,the following items shall be observed:

a. Operation in Unusual Weather. After use, the nozzle shall be wiped with a clean cloth (Item 1, Appendix F) to remove dust, dirt, fuel, moisture, snow, or mud. Store the nozzle in a place that will protect it from extreme temperatures, moisture, dust, dirt, and mud.

b. Outlet Cap Assembly and Dust Plug. The outlet cap assembly and dust plug shall be installed when nozzle is not in use. Component parts shall not be installed dirty or wet.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

No lubrication is required for operation of this equipment.

Section II. TROUBLESHOOTING PROCEDURES

3-1. General.

a. Table 3-1 lists common malfunctions which you may find during operation or maintenance of the nozzle and components. You should perform tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

3-2. Troubleshooting. Table 3-1 lists the common malfunctions which may occur during operation or maintenance of the nozzle. Perform test/inspections and corrective actions in the order listed.

NOTE

Before using this table, be sure that all applicable operating checks have been performed.

Table 3-1. Troubleshooting

Malfunction Test or Inspection Corrective Action
1. HANDLE FAILS TO OPERATE SMOOTHLY.
Inspect handle area for signs of dirt or other foreign matter.
Clean area around handle.
2. LEAKAGE FROM COUPLING HALF.
Step 1. Remove nozzle from fuel hose. Inspect inside coupling half to ensure gasket is in place. Inspect gasket for cuts, tears, or distortion.
If gasket is missing or damaged, install a new gasket in coupling half.
Step 2. Remove coupling half and strainer body from nozzle. Inspect strainer housing to ensure o-ring is in place. Inspect o-ring for cuts, tears, or distortion.
If o-ring is missing or damaged, install a new o-ring in strainer housing. Install strainer body and coupling half in nozzle. Hand-tighten only.

3. INADEQUATE FUEL FLOW.

Step 1. Remove coupling half, strainer body, and strainer from nozzle. Check strainer for dirt or other foreign matter.

Clean strainer by removing all dirt and foreign matter.

Step 2. While strainer is removed, inspect for any damage.

Replace strainer if damaged. Install strainer in nozzle, then install strainer body and coupling half. Hand-tighten only.

Section III. MAINTENANCE PROCEDURES

3-3. General. This section contains maintenance procedures which are the responsibility of the operator.

3-4. Coupling Gasket. (See Figure 3-1).

INITIAL SETUP

This task covers: Removal, Inspection, and Installation.

Tools

None Required.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)

---

a. Removal.

(1) Shut off fuel at source. Put handle in no flow (off) position.

NOTE

A suitable container should be available to catch fuel spillage.

(2) Pull cam arms (1) outward from coupling half (2). Remove nozzle (3) from fuel hose.

(3) Remove gasket (4) from coupling half (2).

b. Inspection.

(1) Inspect gasket (4) for cuts, tears, or distortion.

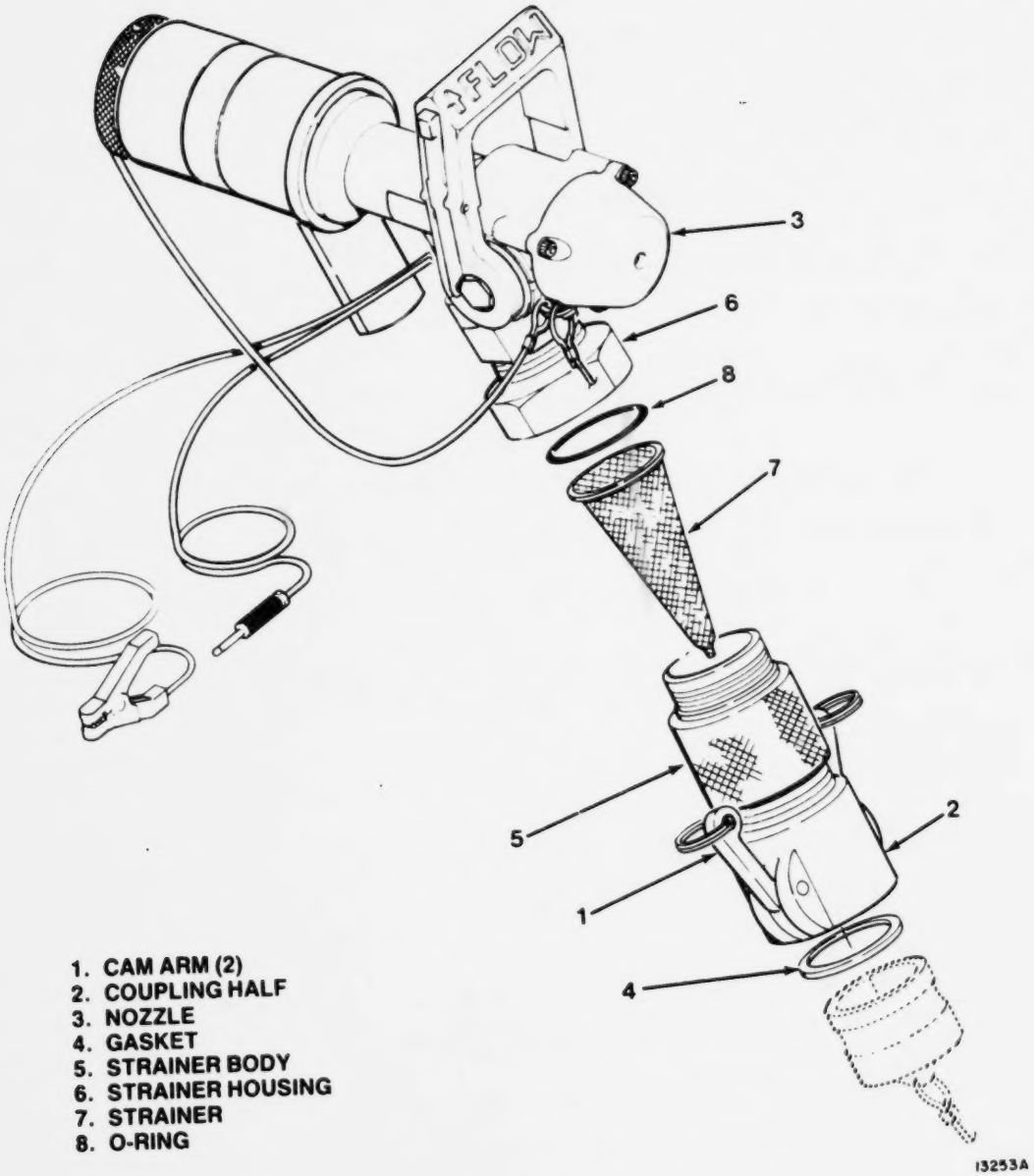
(2) Gasket (4) shall be replaced if damage is found.

c. Installation.

(1) Put gasket (4) inside coupling half (2).

(2) Insert fuel hose in nozzle (3).

(3) Push cam arms (1) inward toward coupling half (2) to secure fuel hose.



1. CAM ARM (2)
2. COUPLING HALF
3. NOZZLE
4. GASKET
5. STRAINER BODY
6. STRAINER HOUSING
7. STRAINER
8. O-RING

Figure 3-1. Coupling Gasket, Strainer, and O-Ring Replacement

3-5. Strainer and O-Ring. (See Figure 3-1).

INITIAL SETUP

This task covers: Removal, Inspection, and Installation.

Tools

None Required.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)

---

a. Removal.

(1) Shut off fuel at source. Put handle in no flow (off) position.

NOTE

A suitable container should be available to catch fuel spillage

(2) Pull cam arms (1) outward from coupling half (2). Remove nozzle (3) from fuel hose.

(3) Turn coupling half (2) and strainer body (5) counterclockwise to unthread from strainer housing (6).

(4) Remove strainer (7) and o-ring (8) from strainer housing (6).

b. Inspection.

(1) Inspect strainer (7) for cracks, distortion, or damage to screen.

(2) Inspect o-ring (8) for cuts, tears, or distortion.

(3) Replace strainer (7) or o-ring (8) if damaged.

c. Installation.

CAUTION

Strainer must be installed carefully to prevent damage to o-ring.

(1) Put o-ring (8) and strainer (7) inside strainer housing (6).

(2) Thread coupling half (2) and strainer body (5) into strainer housing (6). Hand-tighten only.

(3) Insert fuel hose in nozzle (3).

(4) Push cam arms (1) inward toward coupling half (2) to secure fuel hose.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT.

See Appendices B through G for all references to these items.

Section II. SERVICE UPON RECEIPT.

4-1. Checking Unpacked Equipment.

a. Check equipment for damage incurred during shipment. If equipment has been damaged, report damage on SF-364, Report of Discrepancy (ROD).

b. Check equipment against packing slip to see if shipment is complete. Report all discrepancies in accordance with instructions in DA PAM 738-750.

c. Check to see whether equipment has been modified.

Section III. TROUBLESHOOTING PROCEDURES

4-2. General.

a. Table 4-1 lists common malfunctions which you may find during operation or maintenance of the nozzle and components. You should perform tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

4-3. Troubleshooting. Table 4-1 lists the common malfunctions which may occur during operation or maintenance of the nozzle. Perform test/inspections and corrective actions in the order listed.

NOTE

Before using this table, be sure all applicable operating checks have been performed.

Table 4-1. Troubleshooting

Malfunction Test or Inspection Corrective Action
1. OUTLET CAP ASSEMBLY DAMAGED.
Step 1. Inspect outlet cap assembly for corrosion, cracks, or distortion.
If damaged, remove from cable and install new outlet cap.
Step 2. Inspect wire rope for corrosion, cuts, fraying and crimp of sleeves to wire rope.
If damaged, remove from outlet cap and nozzle. Install new wire rope and sleeves.

Table 4-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
1. OUTLET CAP ASSEMBLY DAMAGED - (CONT).
Step 3. Inspect o-ring for cuts, tears, or cracks.
If damaged, remove from outlet cap and install new o-ring.
2. DUST PLUG DAMAGED.
Step 1. Inspect dust plug for corrosion, cracks, or distortion.
If damaged, remove from wire rope. Install new dust plug.
Step 2. Inspect wire rope for corrosion, cuts, fraying, and crimp of sleeves to wire rope.
If damaged, remove from dust plug and nozzle. Install new wire rope and sleeves.
3. GROUND PLUG ASSEMBLY DAMAGED.
Step 1. Inspect ground plug for corrosion, cracks, or distortion.
If damaged, remove from wire. Install new ground plug.
Step 2. Inspect wire and ring terminal for corrosion, cuts, fraying and crimp of ring terminal to wire.
If damaged, remove from ground plug and nozzle. Install new wire and ring terminal. Perform continuity check.
4. GROUND CLIP ASSEMBLY DAMAGED.
Step 1. Inspect ground clip for corrosion, cracks, or distortion.
If damaged, remove from wire rope. Install new ground clip. Perform continuity check.
Step 2. Inspect wire rope and ring terminal for corrosion, cuts, fraying, and crimp of ring terminal to wire rope.
If damaged, remove from ground clip and nozzle. Install new wire rope and ring terminal. Perform continuity check.
5. NOZZLE INLET ASSEMBLY DAMAGED.
Step 1. Inspect inlet nozzle assembly for corrosion, cracks, or distortion.
If damaged, disassemble and replace damaged parts.

Table 4-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
6. LEAKAGE AT OUTLET END.
Step 1. Inspect outlet end for dirt, foreign matter, or damage.
Remove dirt or foreign matter with a clean cloth. If there is any sign of damage send nozzle to Direct Support for overhaul.
Step 2. Press on end of vacuum break valve stem to check for free movement.
If it doesn't move freely or there is any sign of damage send nozzle to Direct Support for overhaul.

Section IV. MAINTENANCE PROCEDURES

4-4. General. This section contains maintenance procedures which are the responsibility of Unit Level Maintenance. The nozzle must be removed from the fuel hose before performing these procedures. Refer to paragraph 3-3 for details.

4-5. Ground Clip Assembly. (See Figure 4-1).

INITIAL SETUP

This task covers: Removal, Disassembly, Inspection, Replacement, Reassembly, and Installation.

Tools

Common hand tools from automotive shop set.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)
Wire Rope, MIL-W-83420, Type II, Comp B - 3/32 (Figure 2, Appendix G)

a. Removal.

(1) Remove capscrew (2) from nozzle (1).

(2) Remove ground clip assembly (3) and ground plug assembly (8) from nozzle (1).

(3) Wipe parts with a clean cloth to remove dirt and fuel.

b. Disassembly.

(1) Loosen two setscrews (4) on ground clip (5) and remove wire rope (7).

(2) Cut ring terminal (6) from wire rope (7) only if wire rope (7) is not damaged and ring terminal (6) requires replacement.

c. *Inspection.*

(1) Inspect ground clip (5) for corrosion, cracks, distortion, and spring tension.

(2) Inspect wire rope (7) for corrosion, cracks, and fraying.

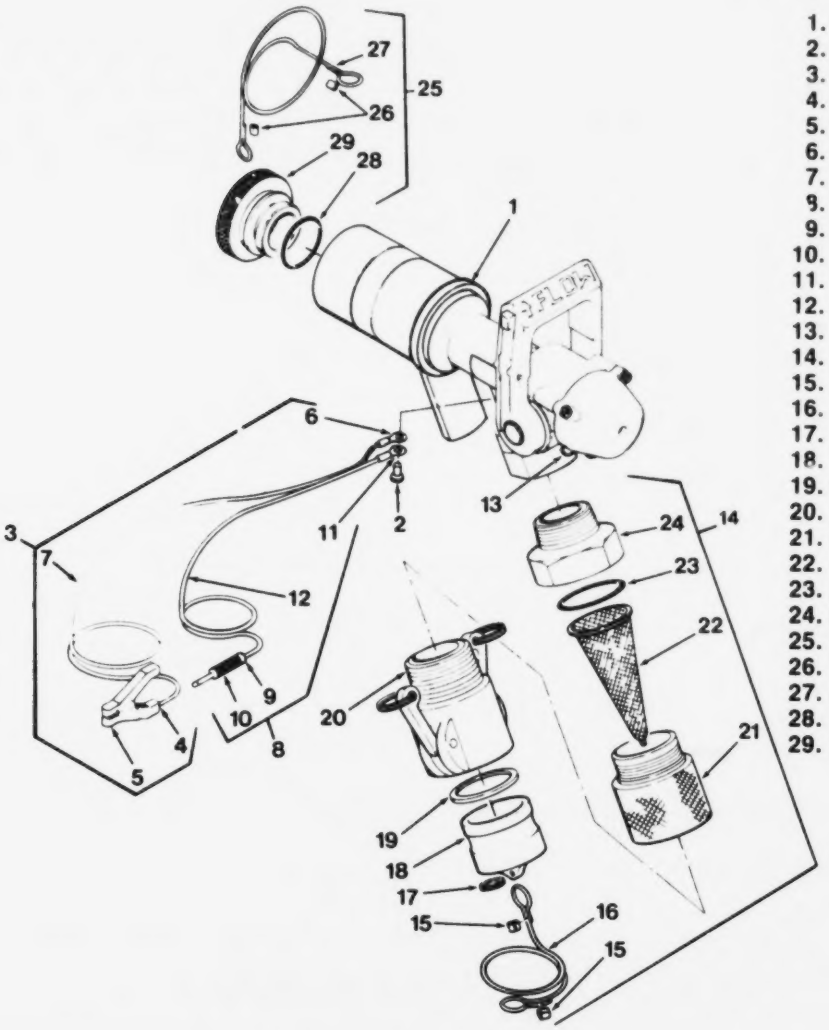
d. *Replacement.* All damaged parts shall be replaced.

e. *Reassembly.*

NOTE

Strip plastic coating from both ends of wire to ensure metal to metal contact.

(1) Strip 3/4 inch of plastic coating from each end of wire rope (7).



1. NOZZLE
2. CAP SCREW
3. GROUND CLIP ASSEMBLY
4. SETSCREW (2)
5. GROUND CLIP
6. RING TERMINAL
7. WIRE ROPE
8. GROUND PLUG ASSEMBLY
9. HEX NUT
10. GROUND PLUG
11. RING TERMINAL
12. WIRE ROPE
13. RING
14. NOZZLE INLET ASSEMBLY
15. SLEEVE (2)
16. WIRE ROPE
17. RING
18. DUST PLUG
19. GASKET
20. COUPLING HALF
21. STRAINER BODY
22. STRAINER
23. O-RING
24. STRAINER HOUSING
25. OUTLET CAP ASSEMBLY
26. SLEEVE (2)
27. WIRE ROPE
28. O-RING
29. OUTLET CAP

NOTE: NUMBERS IN PAREN ( ) INDICATE QUANTITY OF PARTS.

13255A

Figure 4-1. Closed Circuit Refueling (CCR) Nozzle Assembly Components

(2) Slide ring terminal (6) on end of wire rope (7). Crimp ring terminal (6) to wire rope (7).

(3) Insert other end of wire rope (7) in ground clip (5). Tighten two setscrews (4) on ground clip (5).

f. Installation.

(1) Insert capscrew (2) through holes in ring terminals (6 and 11).

(2) Thread capscrew (2) into nozzle (1) and tighten.

(3) Perform continuity check from ground clip (5) to latches in nozzle (1) outlet.

4-6. Ground Plug Assembly. (See Figure 4-1).

INITIAL SETUP

This task covers: Removal, Disassembly, Inspection, Replacement, Reassembly, and Installation.

Tools

Common hand tools from automotive shop set.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)
Wire Rope, MIL-W-83420, Type II, Comp B - 3/32 (Figure 2, Appendix G)

a. Removal.

(1) Remove capscrew (2) from nozzle (1).

(2) Remove ground clip assembly (3) and ground plug assembly (8) from nozzle (1).

(3) Wipe parts with a clean cloth to remove dirt and fuel.

b. Disassembly.

(1) Loosen hex nut (9) on ground plug (10) and remove wire rope (12).

(2) Cut ring terminal (11) from wire rope (12) only if wire rope (12) is not damaged and ring terminal (11) requires replacement.

c. Inspection.

(1) Inspect ground plug (10) for corrosion, cracks, or distortion.

(2) Inspect wire rope (12) for corrosion, cuts, or fraying.

d. Replacement. All damaged parts shall be replaced.

e. ***Reassembly.***

NOTE

Strip plastic coating from both ends of wire to ensure metal to metal contact.

(1) Strip 3/4 inch of plastic coating from each end of wire rope (12).

(2) Slide ring terminal (11) on end of wire rope (12). Crimp ring terminal (11) to wire rope (12).

(3) Insert other end of wire rope (12) in ground plug (10). Tighten hex nut (9) to secure ground plug (10) to wire rope (12).

f. ***Installation.***

(1) Insert capscrew (2) through holes in ring terminals (6 and 10).

(2) Thread capscrew (2) into nozzle (1) and tighten.

(3) Perform continuity check from ground plug (10) to latches in nozzle (1) inlet.

4-7. Nozzle Inlet Assembly. (See Figure 4-1).

INITIAL SETUP

This task covers: Removal, Disassembly, Inspection, Replacement, Reassembly, and Installation.

Tools

Common hand tools from automotive shop set.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)
Wire Rope, MIL-W-83420, Type II, Comp B - 1/8 (Figure 2, Appendix G)
Thread Sealing Compound, MIL-S-45180 (Item 2, Appendix F)
Brass Brush (Item 11, Appendix F)

a. ***Removal.***

NOTE

The following procedure should only be used to replace the nozzle inlet assembly. To remove/disassemble parts refer to paragraph b.

(1) Remove end of wire rope (16) from ring (13).

(2) Clamp nozzle (1) in vise on flats of strainer housing (24).

(3) Turn nozzle (1) counterclockwise to remove from nozzle inlet assembly (14).

(4) Wipe nozzle inlet assembly (14) with a clean cloth to remove dirt and fuel.

b. *Disassembly.*

(1) Remove end of wire rope (16) from ring (13).

(2) Pull cam arms (23) outward from coupling half (20).

(3) Remove dust plug (18).

(4) Remove end of wire rope (16) from ring (17).

(5) Remove ring (17) from dust plug (18).

(6) Remove gasket (19) from coupling half (20).

(7) Turn strainer body (21) counterclockwise and remove from strainer housing (24).

(8) Put coupling half (20) in vise with strainer body (21) pointing up. Using a strap wrench, remove strainer body (21) from coupling half (20).

(9) Remove strainer (22) and o-ring (23) from strainer housing (24).

NOTE

Do not remove strainer housing from nozzle unless inspection indicates part requires replacement.

(10) Turn strainer housing (24) counterclockwise and remove from nozzle (1).

(11) Wipe all parts with a clean cloth to remove dirt and fuel. Use a brass brush to remove thread sealing compound.

c. *Inspection.*

(1) Inspect dust plug (18) for corrosion, cracks, or distortion.

(2) Inspect wire rope (16) and sleeves (15) for corrosion, cuts, or fraying.

(3) Inspect ring (17) for corrosion or distortion.

(4) Inspect gasket (19) for cuts, tears, or distortion.

(5) Inspect coupling half (20) as follows:

(a) Cam arms for cracks or distortion.

(b) Coupling for cracks, distortion, or damaged threads.

(6) Inspect strainer body (21) and strainer housing (24) for cracks, distortion, or damaged threads.

(7) Inspect strainer (22) for cracks, distortion, or damage to screen.

(8) Inspect o-ring (23) for cuts, tears, or distortion.

d. *Replacement.* All damaged parts shall be replaced.

e. *Reassembly.*

(1) Apply a light, even coat of thread sealing compound to threads of strainer housing (24).

CAUTION

Do not over tighten. Failure to comply can result in damage to parts.

(2) Thread strainer housing (24) into nozzle (1) until one to three threads are exposed. Wipe off excess thread sealing compound.

CAUTION

Strainer must be installed carefully to prevent damage to o-ring.

(3) Place o-ring (23) and strainer (22) inside strainer housing (24).

(4) Apply a light, even coat of thread sealing compound to threads of coupling half (20).

CAUTION

Do not over tighten. Failure to comply can result in damage to parts.

(5) Clamp coupling half (20) in a vise. Thread strainer body (21) on to coupling half (20) until one to three threads are exposed. Wipe off excess thread sealing compound.

(6) Thread strainer body (21) into strainer housing (24). Hand-tighten only.

(7) Place gasket (19) inside coupling half (20).

(8) Attach ring (17) to dust plug (18).

(9) Insert end of wire rope (16) through ring (17).

(10) If wire rope (16) was damaged, assemble new sleeves (15) and wire rope (16) as follows:

(a) Form a loop with wire rope (16) and slide sleeves (15) on wire rope (16).

(b) Crimp one sleeve (15) to loop in wire rope (16).

(c) Repeat steps (a) and (b) on other end of wire rope (16).

(11) Insert dust plug (18) in coupling half (20).

(12) Push cam arms inward toward coupling half (20).

(13) Attach wire rope (16) to ring (13).

f. Installation.

NOTE

The following procedures are for installation of the nozzle inlet assembly.

(1) Apply a light, even coat of thread sealing compound to threads of nozzle inlet assembly (14). Wipe off excess.
(2) Clamp nozzle inlet assembly (14) in a vise on flats with strainer housing (24) pointing up.

CAUTION

Do not over tighten. Failure to comply can result in damage to parts.

(3) Thread nozzle (1) onto nozzle inlet assembly (14) until one to three threads are exposed. Wipe off excess thread sealing compound.

(4) Attach wire rope (16) to ring (13).

4-8. Outlet Cap Assembly. (See Figure 4-1).

INITIAL SETUP

This task covers: Removal, Disassembly, Inspection, Replacement, Reassembly, and Installation.

Tools

Common hand tools from automotive shop set.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix F)
Wire Rope, MIL-W-83420, Type II, Comp B - 1/8 (Figure 1, Appendix G)

a. Removal.

(1) Remove wire rope (27) from ring (13).

(2) Remove outlet cap assembly (25) from nozzle (1).

(3) Wipe parts with a clean cloth to remove dirt and fuel.

b. Disassembly.

(1) Remove o-ring (28) from outlet cap (29).

CAUTION

The wire rope should not be removed from outlet cap unless damaged and replacement is required.

(2) Cut wire rope (27) between sleeve (26) and outlet cap (29).

(3) Remove wire rope (27) from outlet cap (29).

c. *Inspection.*

(1) Inspect outlet cap (29) for corrosion, cracks, or distortion.

(2) Inspect o-ring (28) for cracks, cuts, tears, or distortion.

(3) Inspect wire rope (27) and sleeves (26) for corrosion, cuts, or fraying.

d. *Replacement.* All damaged parts shall be replaced.

e. *Reassembly.*

(1) If wire rope (27) was damaged, assemble new sleeves (26) and wire rope (27) as follows:

(a) Slide one sleeve (26) on wire rope (27).

(b) Insert end of wire rope (27) through hole in outlet cap (29).

(c) Form a loop with wire rope (27) and slide sleeve (26) over end of wire rope (27).

(d) Crimp sleeve (26) to wire rope (27).

(e) Repeat steps (a), (b), (c) and (d) on other end of wire rope (27).

(2) Install o-ring (28) in groove of outlet cap (29).

f. *Installation.*

(1) Install outlet cap assembly (25) in end of nozzle (1).

(2) Attach other end of wire rope (27) to ring (13).

CHAPTER 5

INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. TROUBLESHOOTING PROCEDURES

5-1. General.

a. Table 5-1 lists common malfunctions which you may find during operation or maintenance of the Closed Circuit Refueling (CCR) Nozzle Assembly or its related parts. You should perform the tests and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

5-2. Troubleshooting. Table 5-1 lists the common malfunctions which may occur during operation or maintenance of the nozzle. Perform test/inspections and corrective actions in the order listed. For nozzle disassembly/reassembly procedures refer to paragraph 5-3.

Table 5-1. Troubleshooting

Malfunction Test or Inspection Corrective Action
1. INADEQUATE (SLUGGISH) FUEL FLOW.
Step 1. Remove coupling half, strainer body, and strainer from nozzle subassembly. Check strainer for dirt or other foreign matter.
Clean strainer by removing all dirt and foreign matter.
Step 2. While strainer is removed, inspect for damage.
Replace strainer if damaged. Install strainer in nozzle subassembly. Install strainer body and coupling half. Hand-tighten only.
Step 3. Internal blockage.
Disassemble nozzle subassembly. Inspect for internal blockage, clean, and assemble.
2. HANDLE WILL NOT LOCK IN FLOW (ON) OR NO FLOW (OFF) POSITION.
Inspect thumb latch and thumb spring.
Check that dowel pin is not cracked, rounded, missing, or broken off. Check that spring is not broken or missing. Replace either part if damaged.

Table 5-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
3. INDICATOR SHAFT DOES NOT OPERATE (DOES NOT EXTEND).
Inspect assembly of indicator shaft and components for proper assembly and/or damaged parts.
NOTE This procedure can only be done during nozzle subassembly maintenance.
Remove stem and end cap. Check components for correct position. As required, assemble in the correct position.
4. LEAKAGE FROM UNDER EDGE OF ID PLATE IN NOZZLE BODY.
Inspect seals in nozzle body.
NOTE This procedure can only be done during nozzle subassembly maintenance.
Disassemble nozzle subassembly. Inspect seal for proper position, cuts, and tears. Replace if damaged and assemble nozzle subassembly.
5. LEAKAGE FROM END CAP.
Inspect seal in stem guide and o-ring in nozzle body.
NOTE This procedure can only be done during nozzle subassembly maintenance.
Disassemble nozzle subassembly. Inspect seal and o-ring for proper position, cuts, and tears. Replace if damaged and assemble nozzle subassembly.
6. LEAKAGE FROM OUTLET END OF NOZZLE ASSEMBLY WHEN CONNECTED.
Remove nozzle assembly from receptacle. Place handle in no flow (off) position. Inspect seal.
Replace seal if cut or torn.
7. LEAKAGE FROM OUTLET END OF NOZZLE ASSEMBLY WHILE DISCONNECTED FROM RECEPTACLE.
Step 1. Look inside outlet end. See if leakage is coming from around outside of safety sleeve.
NOTE These procedures can only be done during nozzle subassembly maintenance.
Remove stem and safety sleeve. Inspect position of seal (facing the correct direction). If not, remove and install a new seal in correct position. If seal is cut or torn, replace it. Install safety sleeve and stem.

Table 5-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
7. LEAKAGE FROM OUTLET END OF NOZZLE ASSEMBLY WHILE DISCONNECTED FROM RECEPTACLE - (CONT).
Step 2. Look inside outlet end. See if leakage is coming from vacuum break valve in stem.
Press on end of vacuum break stem to check for free movement. If it sticks or binds, replace stem.
Step 3. Look inside outlet end. See if leakage is coming from around stem.
Remove stem and safety sleeve. Inspect parts for wear, cracks, or distortion. Replace any damaged parts. Assemble nozzle.
8. NO ELECTRICAL CONTINUITY BETWEEN GROUND CLIP/GROUND PLUG AND NOZZLE ASSEMBLY.
Inspect wires, ring terminals, capscrew, and nozzle assembly for dirt or corrosion.
Remove capscrew and wires. Remove any dirt or corrosion from wires, ring terminals, capscrew, and nozzle assembly. Assemble parts and test for continuity. Replace damaged components.
9. PULLBACK SLEEVE DOES NOT ACTIVATE OR LOCK ON RECEPTACLE.
Disassemble nozzle assembly and inspect parts.
NOTE This procedure can only be done during nozzle subassembly maintenance.
Check for cracks, distortion, out of round condition, or improper assembly of parts. Replace all damaged parts and assemble in the proper order.

Section II. MAINTENANCE PROCEDURES

5-3. General. This section contains maintenance procedures which are the responsibility of Intermediate Direct Support Maintenance.

INITIAL SETUP

This task covers: Disassembly, Cleaning, Inspection, Replacement and Repair, Reassembly, and Testing.

Tools

Common hand tools in Automotive Shop Set
Piston Tool, 125-17120 (Item 1, Section III, Appendix B)
Stem Tool, 125-17140 (Item 2, Section III, Appendix B)
Spanner Wrench, 125-17160 (Item 3, Section III, Appendix B)
Regulator Tool, 125-17130 (Item 4, Section III, Appendix B)
Outlet Proof Test Adapter, 125-17150 (Item 5, Section III, Appendix B)
Inlet Proof Test Adapter, 125-17151 (Item 6, Section III, Appendix B)

Tools - Continued

Pressure Gauge (2)(0-300 psig) (Item 7, Section III, Appendix B)
Hydraulic Pump (0-300 psig) (Item 8, Section III, Appendix B)
Filter (15 Micron) (Item 9, Section III, Appendix B)
Fluid Reservoir (10-20 Gallon) (Item 9, Section III, Appendix B)
Multimeter (Item 11, Section III, Appendix B)

Materials/Parts

Lint-free Cloth, MIL-C-85043 (Item 1, Appendix G)
Thread Sealing Compound, MIL-S-45180 (Item 2, Appendix G)
Dry Cleaning Solvent, P-D-680, Type II (Item 3, Appendix G)
Calibrating Fluid, MIL-C-7024, Type II (Item 4, Appendix G)
Aluminum Oxide Abrasive Cloth, P-C-451 (Item 5, Appendix G)
Paint, MIL-C-46168 (Item 6, Appendix G)
Masking Tape (Item 7, Appendix G)
Cushioning Material, PPP-C-843 (Item 8, Appendix G)
Water-Vaporproof Bag, MIL-B-117 (Item 9. Appendix G)
Fiberboard Container, PPP-B-636 (Item 10, Appendix G)

Major Repair Kit, 125-17101
Minor Repair Kit, 125-17100

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted in maintenance area. Failure to comply can result in injury or death of personnel.

Proper eye protection must be worn. Failure to comply can result in injury or death of personnel.

CAUTION

Before disassembly, wipe exterior of nozzle with a clean cloth to remove dust, dirt, grease or fuel residue to prevent contamination of internal parts.

a. Disassembly.

(1) Remove capscrew (1, Figure 5-1), ground clip assembly (2), and ground plug assembly (3) from nozzle subassembly (12).

(2) Remove outlet cap assembly (4) and dust plug (5) from ring (6). Remove ring (6) from nozzle subassembly (12).

NOTE

Ring can be left on nozzle subassembly unless replacement is required.

(3) Turn coupling half (7) and strainer body (8) counterclockwise to remove from nozzle subassembly (12).

(4) Remove strainer (9) and o-ring (10) from strainer housing (11). Do not remove strainer housing (11) from nozzle subassembly (12).

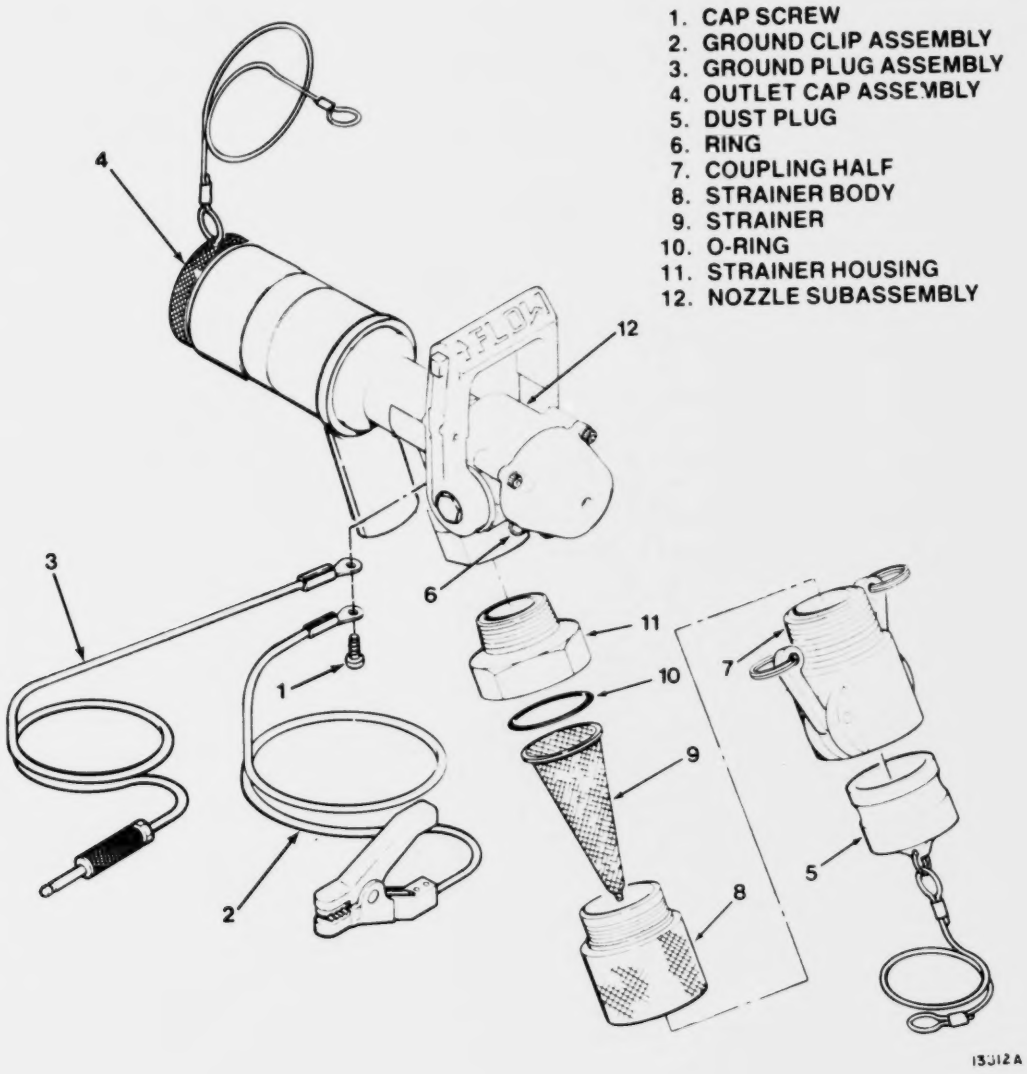


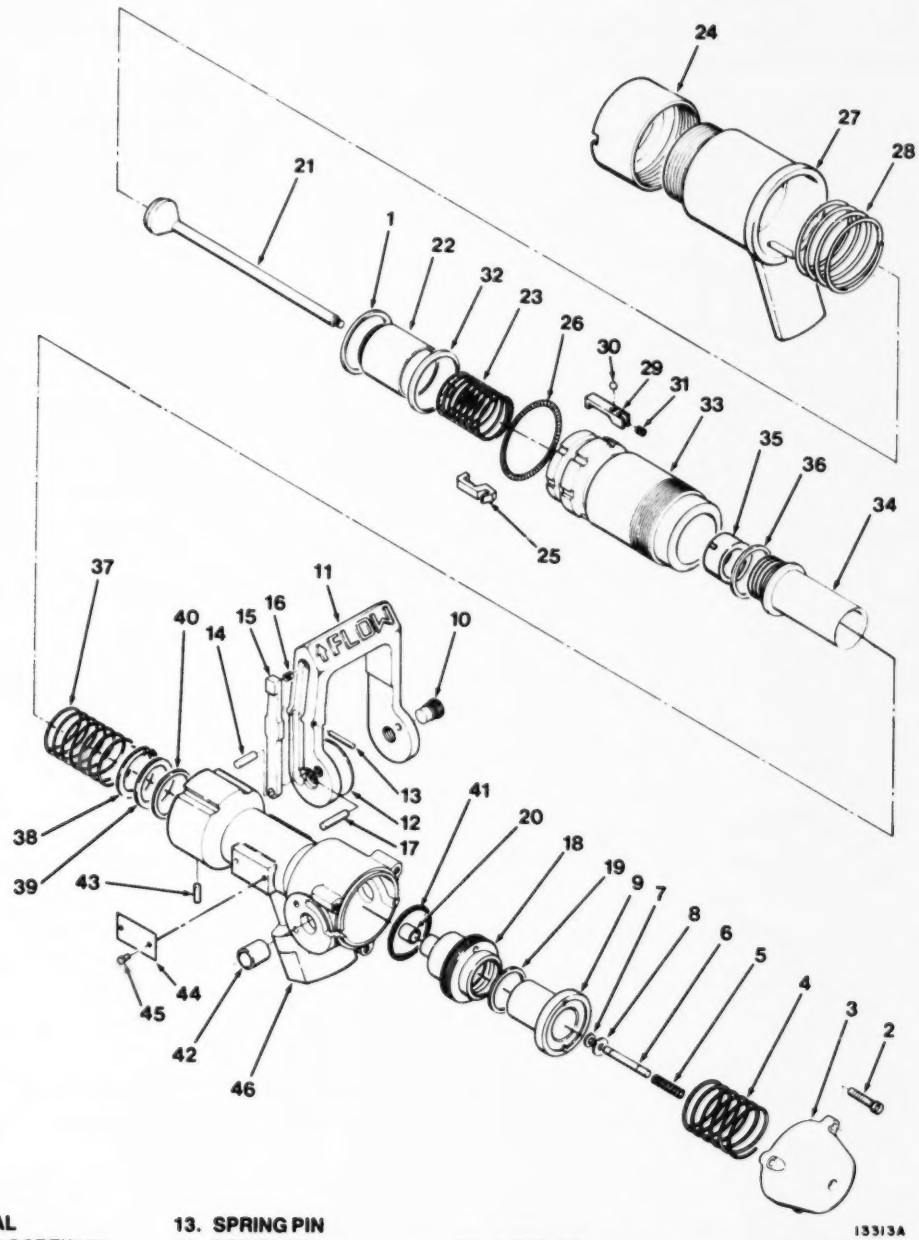
Figure 5-1. Closed Circuit Refueling (CCR) Nozzle Assembly

CAUTION

Clamp only on flats of strainer housing. Do not overtighten vise, damage to strainer housing can result.

(5) Put nozzle subassembly (12) in vise with outlet end pointing up.

(6) Put handle (11, Figure 5-2) in no flow (off) position. Remove seal (1) from inside latch adapter (33).



1. SEAL
2. CAP SCREW (3)
3. END CAP
4. SPRING (SHUT-OFF)
5. SPRING (INDICATOR)
6. INDICATOR SHAFT
7. RETAINING RING
8. FLAT WASHER
9. PISTON
10. HINGE PIN (2)
11. HANDLE
12. WASHER (2)
13. SPRING PIN
14. DOWEL PIN
15. THUMB LATCH
16. SPRING (THUMB LATCH)
17. DOWEL PIN
18. STEM GUIDE
19. SEAL
20. STEM BUSHING
21. STEM
22. SAFETY SLEEVE
23. SPRING (SAFETY)
24. NOSE SLEEVE
25. LATCH (6)
26. ENDLESS SPRING
27. PULLBACK SLEEVE
28. SPRING (PULLBACK SLEEVE)
29. RELEASE PIN (2)
30. BALL BEARING (2)
31. SPRING (RELEASE PIN) (2)
32. SEAL
33. LATCH ADAPTER
34. REGULATOR SLEEVE
35. BACKUP RING
36. SEAL
37. SPRING (SLEEVE)
38. SNAP RING
39. WASHER
40. SEAL
41. O-RING
42. HINGE BUSHING (2)
43. SPRING PIN
44. ID PLATE
45. RIVET (2)
46. NOZZLE BODY

Figure 5-2. Nozzle Subassembly Components

(7) Install stem tool as follows: (See Figure 5-3.)

(a) Put handle (11, Figure 5-2) in FLOW (on) position. Push pullback sleeve (27) down to latched position.

(b) Insert forward pins of stem tool in holes of stem (21).

(c) Put handle (11) in no flow (off) position and insert rear pins of stem tool in slots on face of nose sleeve (24).

(d) Push down on stem tool until latches (25) engage stem tool.

NOTE

Do not push down on pullback sleeve or stem tool will fall out.

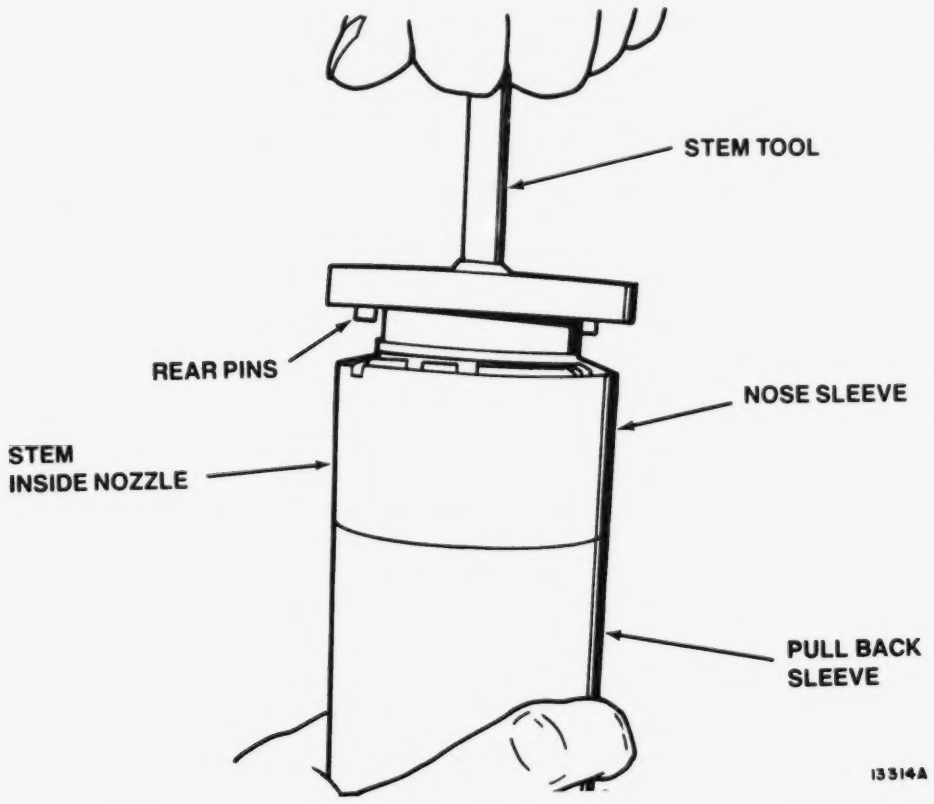


Figure 5-3. Stem Tool Installation

(8) Remove end cap (3) and related parts as follows:

(a) Position nozzle body (46) in vise with end cap (3) pointing up.

WARNING

End cap is under spring tension. Remove capscrews slowly to prevent parts from flying out. Failure to comply can result in personal injury.

(b) Loosen capscrews (2). Push down on end cap (3) and remove capscrews (2) from end cap (3).

(c) Slowly release end cap (3) to relieve spring tension.

(d) Remove end cap (3), springs (4 and 5), and indicator shaft (6) from nozzle body (46).

NOTE

Do not remove retaining ring from indicator shaft unless inspection indicates replacement is required.

(e) Remove spring (5), flat washer (8) and retaining ring (7) from indicator shaft (6).

(9) Remove piston (9) as follows: (See Figure 5-4.)

(a) Align pins in piston torque tool with holes in flange of piston (9, Figure 5-2).

(b) Turn piston torque tool counterclockwise to loosen piston (9) from stem (21).

(c) Remove piston torque tool and piston (9) from nozzle body (46).

(10) Remove hinge pins (10) from side of handle (11).

(11) Remove handle (11) and washers (12) from nozzle body (46).

CAUTION

Do not disassemble handle unless inspection shows that replacement is required. Only remove parts requiring replacement.

(12) Disassemble handle (11) and related parts as follows:

(a) Drive spring pin (13) from handle (11).

(b) Remove thumb latch (15) and spring (16) from groove in handle (11).

(c) Drive dowel pin (14) out of thumb latch (15) from outside surface.

(d) Drive dowel pins (17) out of handle (11).

(13) Remove stem guide (18) as follows:

(a) Align pins in piston torque tool with holes in flange of stem guide (18).

(b) Turn piston torque tool counterclockwise to loosen stem guide (18) from nozzle body (46).

(c) Remove piston torque tool and stem guide (18) from nozzle body (46).

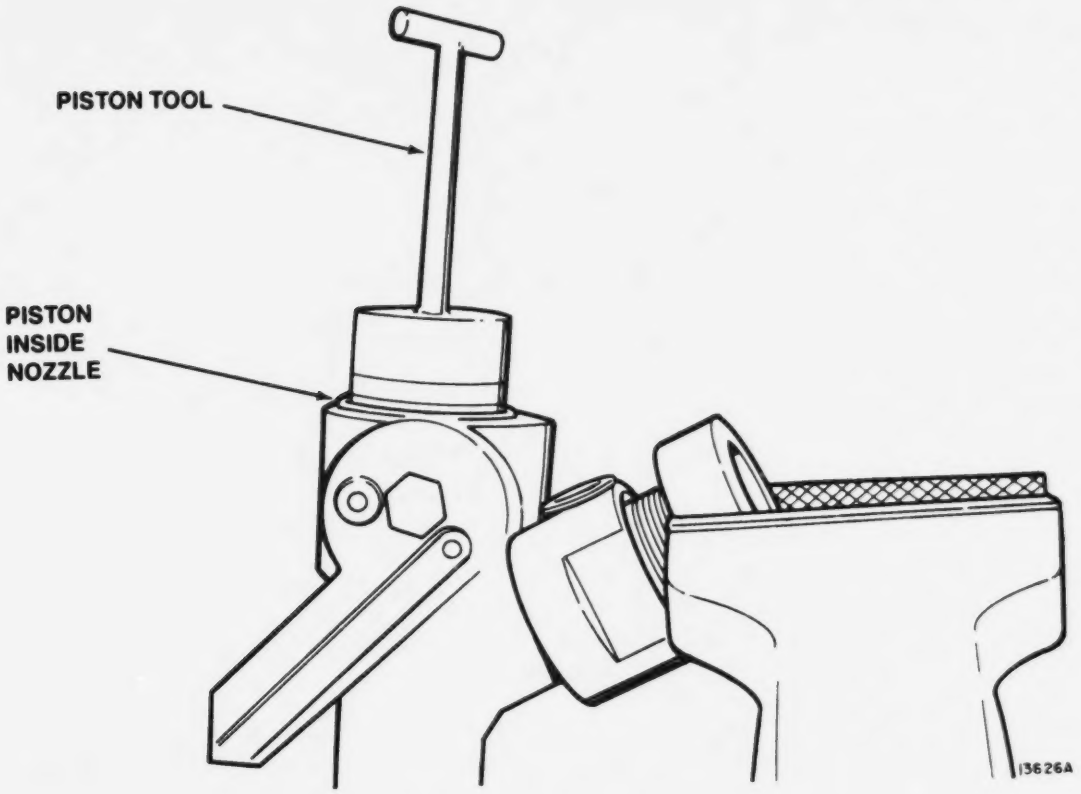


Figure 5-4. Piston Removal

(14) Remove seal (19) and stem bushing (20) from stem guide (18).

(15) Remove stem (21) and related parts as follows:

(a) Turn nozzle body (46) in vise with outlet end pointing up.

WARNING

Stem is under spring tension. Remove stem tool slowly to prevent parts from flying out. Failure to comply can result in personal injury.

(b) Hold stem tool and push down on pullback sleeve (27) until release pins (29) engage.

(c) Remove stem tool from nozzle body (46).

(d) Remove stem (21), safety sleeve (22), and spring (23) from nozzle body (46).

(16) Push down on pullback sleeve (27) and press down on release pins (29) so that pullback sleeve (27) slides up and stops. (See Figure 5-5.)

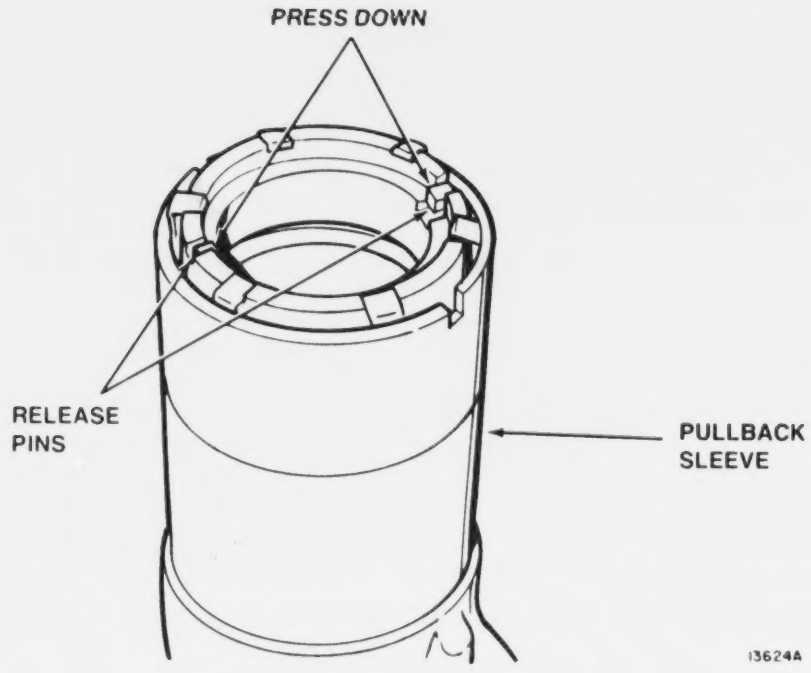


Figure 5-5. Pressing Release Pins

(17) Remove nose sleeve (24, Figure 5-2) from pullback sleeve (27) using spanner wrench. (See Figure 5-6.)

(18) Remove latches (25, Figure 5-2) and endless spring (26) as follows:

(a) Push down on pullback sleeve (27) until release pins (29) engage.

(b) Lift endless spring (26) out of groove of one latch (25). Pull latch (25) up and out of groove.

(c) Repeat step (b) to remove all but one latch (25).

(d) Remove final latch (25) and endless spring (26).

(19) Remove pullback sleeve (27) and related parts as follows:

(a) Push down on pullback sleeve (27) until it stops. Hold down release pins (29) and let pullback sleeve (27) slide up.

WARNING

Pullback sleeve is under spring tension. Remove slowly to prevent parts from flying out. Failure to comply can result in personal injury.

(b) Slide pullback sleeve (27) from nozzle body (46) slowly to relieve spring tension. Remove carefully, ball bearings (30) and springs (31) may drop out.

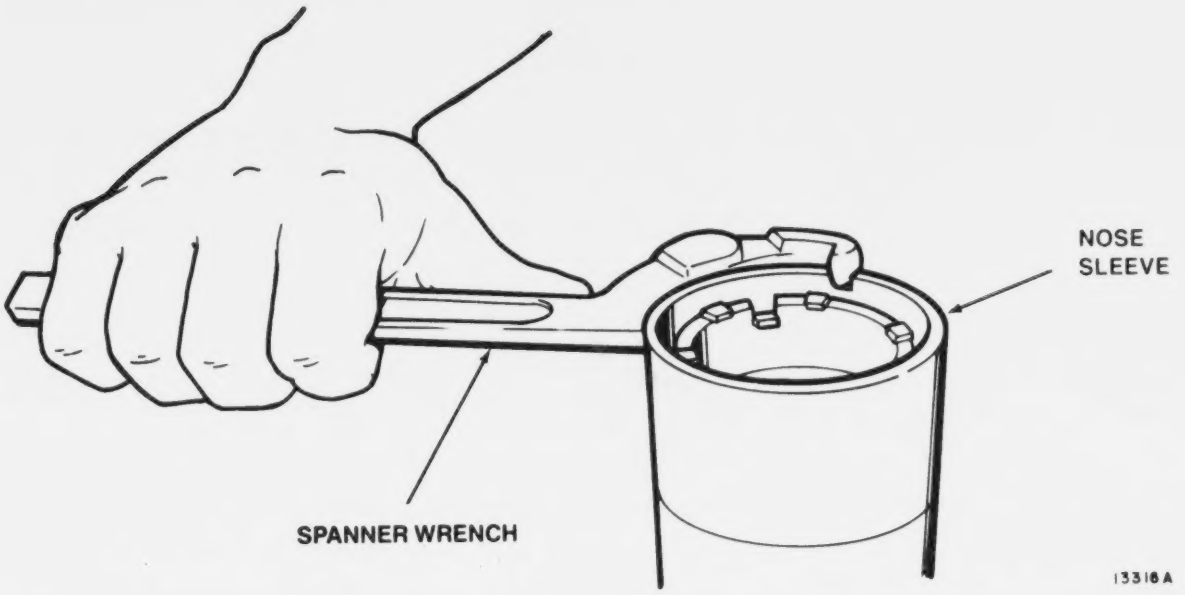


Figure 5-6. Nose Sleeve Removal

(c) Remove release pins (29), ball bearings (30), and springs (31) from latch adapter (33).

(20) Remove spring (28) from nozzle body (46).

(21) Remove latch adapter (33) as follows: (See Figure 5-7.)

(a) Insert rod end of regulator tool through bottom of nozzle body (46, Figure 5-2).

(b) Position front plate of regulator tool on end of regulator sleeve (34) with small face down.

(c) Release handle on regulator tool. In this position small face on front plate engages open end of regulator sleeve (34).

(d) Pull handle down to compress spring (37).

(e) Seat rear plate against nozzle body (46). Insert cotter pin in hole behind rear plate and release handle.

(f) Remove latch adapter (33) using spanner wrench.

(g) Pull down on handle and remove cotter pin. Let handle slide up slowly to release spring tension.

(h) Remove regulator tool from nozzle body (46).

(22) Remove regulator sleeve (34) and spring (37) from nozzle body (46).

(23) Remove backup ring (35) and seal (36) from regulator sleeve (34).

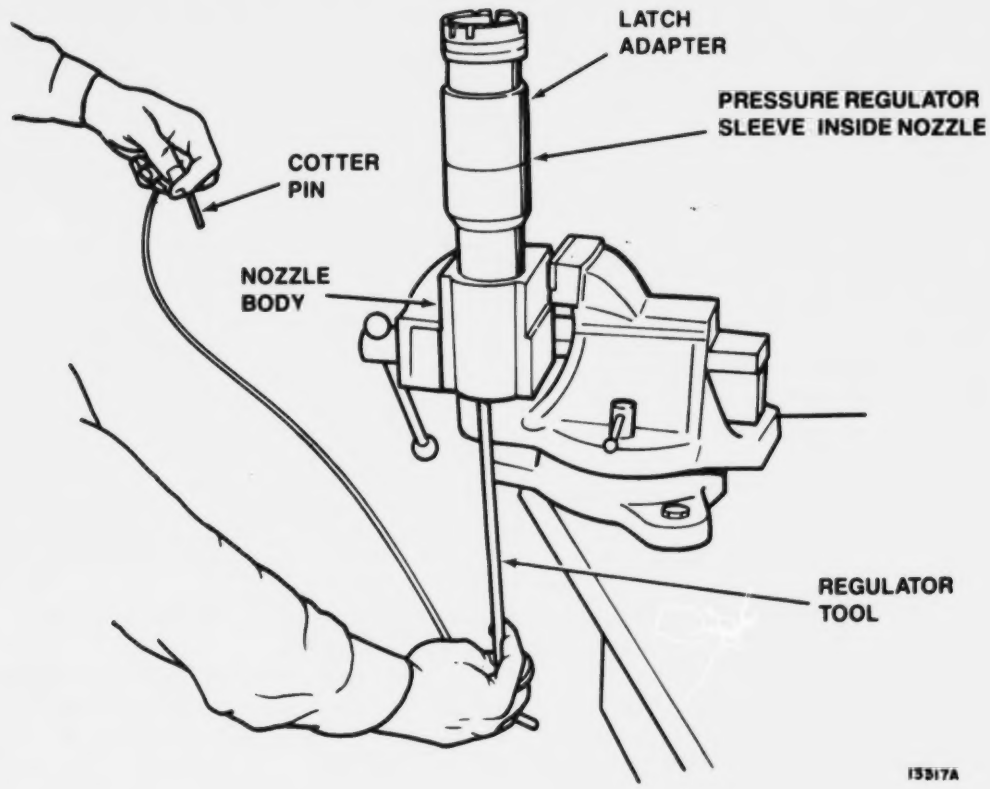


Figure 5-7. Latch Adapter Removal

(24) Remove snap ring (38), washer (39), seal (40), and o-ring (41) from nozzle body (46).

(25) Remove hinge bushings (42) from nozzle body (46).

(26) Remove nozzle body (46) from vise.

CAUTION

Do not remove spring pin or ID plate from nozzle body unless inspection indicates replacement is required. Damage to nozzle body can result.

(27) Remove spring pin (43) from nozzle body (46).

(28) Remove rivets (45) and ID plate (44) from nozzle body (46).

NOTE

Do not remove strainer housing from nozzle body unless inspection indicates parts require replacement.

b. *Cleaning.*

CAUTION

Do not use wire brushes or wire wheels to clean parts. Failure to comply can result in damage to paint or metal finish of parts and require replacement.

(1) Wipe parts with a clean cloth to remove dust, dirt, or fuel.

WARNING

Dry cleaning solvent, P-D-680 Type II, is flammable and toxic to eyes, skin, and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged contact. Use only in well ventilated areas. Keep away from open flames or other sources of ignition.

(2) Remove heavy deposits of dirt or grease with a clean cloth dipped in dry cleaning solvent. Use low pressure, filtered air to dry parts.

(3) As required, flush nozzle body (46) with dry cleaning solvent to remove fuel and foreign material from internal passages. Use low pressure, filtered air to dry nozzle body (46).

c. *Inspection.*

CAUTION

Do not remove paint from external surfaces to inspect for damage. Failure to comply can damage parts and require replacement.

(1) Inspect piston (9) for nicks, scratches, and wear of metal finish.

(2) Inspect handle (11), thumb latch (15), and spring (16) for cracks or distortion in shape. Inspect threads in handle (11) for stripping or cross-threading.

(3) Inspect stem (21) for straightness, nicks, burrs, wear of metal finish, and stripped or distorted threads. Internal passage must not be plugged.

(4) Inspect indicator shaft (6) for straightness, corrosion, and wear of metal finish. Groove for retaining ring (7) must not have any nicks or burrs.

(5) Inspect nozzle body (46) as follows:

(a) Check external surfaces for cracks, corrosion, or wear of metal finish.

(b) Check internal surfaces for scoring, scratches, nicks, or burrs.

(c) Check internal passages for dirt or any residue of dry cleaning solvent.

(d) Check threaded holes for cross-threading, dirt, or corrosion.

(6) Inspect all other metal parts as follows:

(a) Check for cracks, distortion, corrosion, or wear of metal finish.

(b) Check seal and o-ring grooves for nicks, scratches, or burrs that could damage seals and o-rings during reassembly.

(c) Check threads for stripping, nicks, cross-threading, or corrosion.

(7) Inspect painted surfaces for peeling, chipping, or scratches.

d. Replacement and Repair.

(1) Replace all cracked, distorted, or heavily corroded parts.

CAUTION

Do not use crocus abrasive cloth or emery cloth on aluminum parts. Cloth contains iron oxide which causes rapid oxidation of aluminum.

(2) Remove minor corrosion with very fine aluminum oxide cloth. Do not remove metal finish.

(3) Remove small scratches, nicks, or burrs with fine aluminum oxide cloth. Do not change shape or size of grooves or threads.

(4) Remove and repair damaged paint as follows:

CAUTION

Painting shall be done after final assembly and testing to prevent damage to internal parts.

(a) Remove chipped or peeling paint using aluminum oxide cloth. Do not remove metal finish.

(b) Remove raised edges of scratches using aluminum oxide cloth.

(c) Refer to Painting Instructions for Army Material, TM 43-0139, for specific application procedures.

WARNING

Paint, MIL-C-46168, is toxic. Use only in a well ventilated area. Read and follow all safety and mixing instructions on containers. Failure to comply can result in injury or death of personnel.

(d) Touch up damage to painted surfaces using paint.

(e) Allow paint to dry and cure before handling or assembling parts.

e. **Reassembly.**

CAUTION

All seals, o-rings, and threads, unless otherwise noted, shall have a light coat of grease applied before reassembly. Wipe off excess grease. Only use grease contained in repair kit. Failure to comply can result in damage to parts.

Plain seals must be installed as follows. Depress into an oval shape between thumb and finger. Insert beyond seal groove and release. With a finger of one hand pull part of seal into groove and hold. With a finger from other hand, gently work seal into groove. Inspect for uniform fit. Failure to install seals properly may result in damage to parts.

NOTE

A repair kit is available for the nozzle subassembly. The kit contains all necessary seals, o-rings, small metal parts, and a grease pak. Install all kit parts regardless of condition of original parts.

(1) If strainer housing (11) was removed from nozzle body (46, Figure 5-2) assemble as follows:

(a) Using a brass brush, clean threads to remove old thread sealing compound.

(b) Apply a light, even coat of thread sealing compound to threads of strainer housing (11, Figure 5-1).

CAUTION

Do not over tighten strainer housing. Failure to comply can result in damage to strainer housing.

(c) Thread strainer housing (11) into nozzle body (46, Figure 5-2) until only one to three threads are exposed. Wipe off excess thread sealing compound.

(2) Position ID plate (44) on nozzle body (46). Tap in rivets (45).

(3) Tap spring pin (43) into hole near outlet end of nozzle body (46).

(4) Install hinge bushings (42) in sides of nozzle body (46). Top of each hinge bushing (42) shall be flush with outer edge of hole.

(5) Install o-ring (41) in inner groove of nozzle body (46) . Be sure o-ring (41) is not twisted, cut, or distorted.

(6) Install seal (40) as follows:

CAUTION

Seal must be installed with spring side facing rear of nozzle body and must not be twisted or distorted. If damaged during reassembly, seal must be replaced.

(a) Install seal (40) through outlet end of nozzle body (46) and against shoulder.

(b) Install washer (39) on top of seal (40).

(c) Install snap ring (38) in groove of nozzle body (46). Check to be sure snap ring is completely seated in groove.

(d) Carefully insert regulator sleeve (34) through seal (40). Rotate regulator sleeve (34) to check for uniform drag. Non uniform drag indicates seal (40) is not installed correctly.

(e) Remove regulator sleeve (34).

(7) Install seal (36) on regulator sleeve (34) with spring side facing toward backup ring (35) side.

CAUTION

Do not clamp parts in a vise. Do not use an extention or cheater bar with spanner wrench. Failure to comply can result in damage to parts.

(8) Thread backup ring (35) on regulator sleeve (34) and tighten with spanner wrench.

CAUTION

Clamp vise only on flats of strainer housing. Do not over tighten . Failure to comply can result in damage to strainer housing.

(9) Put nozzle body (46) in vise with outlet end pointing up.

(10) Install spring (37) and regulator sleeve (34) in nozzle body (46). Backup ring (35) must be on top.

(11) Install regulator tool as follows:

(a) Insert regulator tool through bottom of nozzle body (46).

(b) Place front plate of regulator tool on regulator sleeve (34) with small face down. (See Figure 5-8.)

(c) Align regulator sleeve (34, Figure 5-2) with seal (38) in nozzle body (46).

(d) Pull down on handle and position rear plate against bottom of nozzle body (46). Insert cotter pin in hole of rod.

(e) Slowly release handle to lock regulator tool in place.

(12) Install seal (32) in latch adapter (33). Spring side must face threaded end of latch adapter (33).

(13) Install latch adapter (33) and related parts as follows:

(a) Thread latch adapter (33) into nozzle body (46) until one to two threads are engaged.

(b) Slide spring (28) over latch adapter (33) and against nozzle body (46).

(c) Insert one spring (31) in groove of each release pin (29).

(d) Slide pullback sleeve (27) over latch adapter (33) and align slot with spring pin (43). Push pullback sleeve (27) down against nozzle body (46) and hold in place.

(e) Install spring (31) and release pin (29) assemblies in grooves of latch adapter (33).

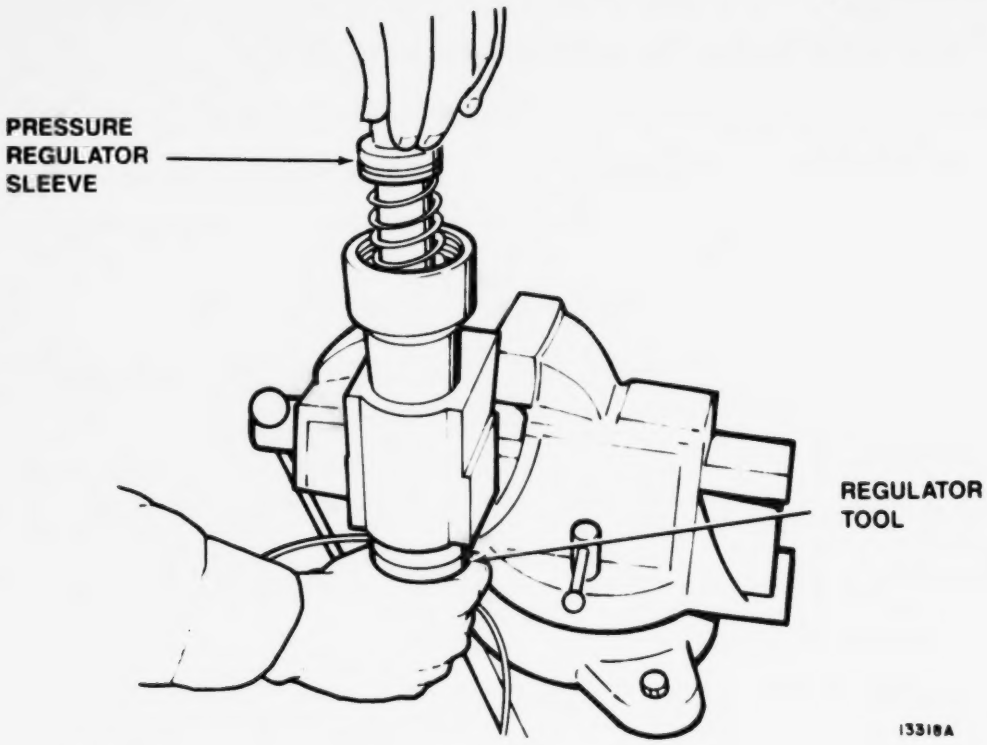


Figure 5-8. Regulator Sleeve Installation

(f) Let pullback sleeve (27) slide up and over release pins (29) until end of pullback sleeve (27) is close to hole in release pins (29).

(g) Install one ball bearing (30) in each hole. Let pullback sleeve (27) slide up and touch ball bearings (30).

(h) Push down on release pins (29) while carefully holding pullback sleeve (27) to prevent rapid upward movement. Pullback sleeve (4) will slide down slightly, then slide up to hold release pins (29) and ball bearings (30) in place.

CAUTION

Do not use an extention or cheater bar with spanner wrench. Failure to comply can result in damage to parts.

(i) Thread latch adapter (33) into nozzle body (46) and tighten using spanner wrench.

(14) Remove regulator tool as follows:

(a) Pull down on handle and remove cotter pin.

(b) Remove front plate.

(c) Pull regulator tool out through bottom of nozzle body (46).

(15) Install latches (25) and endless spring (26) as follows:

(a) Install one latch (25) in groove of latch adapter (33).

(b) Hold pullback sleeve (27) and push down on release pins (29).

(c) Allow pullback sleeve (27) to slide up slowly and contact heel of latch (25) to hold pullback sleeve (27) in position.

(d) Install remaining five latches (25) in grooves of latch adapter (33).

(e) Roll endless spring (26) over latches (25) and into groove of latch adapter (33).

CAUTION

Do not use an extention or cheater bar with spanner wrench. Failure to comply can result in damage to parts.

(16) Thread nose sleeve (24) on pullback sleeve (27) and tighten using spanner wrench.

(17) Place spring (23) on inside shoulder of latch adapter (33).

(18) Install safety sleeve (22) over spring (23).

(19) Slide stem (21) through safety sleeve (22).

(20) Push down on pullback sleeve (27) until release pins (29) engage.

(21) Install stem tool as follows: (See Figure 5-3.)

(a) Insert forward pins of stem tool in holes of stem (21, Figure 5-2).

CAUTION

Push down on stem tool carefully to prevent damage to seal.

(b) Push down on stem tool to compress spring (23) and slide safety sleeve (22) through seals(1 and 32).

(c) When almost completely inserted, align rear pins of stem tool with slots in nose sleeve (24).

(d) Continue to push down until latches (25) engage stem tool.

NOTE

Do not push down on pullback sleeve or stem tool will fall out.

(22) Turn nozzle body (46) in vise so that outlet end is pointing down.

(23) Install seal (19) and stem bushing (20) in stem guide (18) as follows:

(a) Install seal (19) in inner groove with spring facing toward stem bushing (20) end.

(b) Squeeze sides of stem bushing (20) until it curls slightly.

CAUTION

Stem bushing must be properly seated, or it will be damaged during installation.

(c) Install stem bushing (20) in small end of stem guide (18). Seat stem bushing (20). Be sure there are no nicks or burrs that can damage stem (21).

(24) Install stem guide (18) as follows: (See Figure 5-9.)

(a) Install stem guide (22, Figure 5-2) in nozzle body (46) and over threaded stem end, with end of stem (21) inserted in stem bushing (20).

CAUTION

Do not use an extention or cheater bar with piston torque tool. Failure to comply can result in damage to parts.

(b) Thread stem guide (22) into nozzle body (46) and tighten using piston torque tool.

(25) Assemble handle (11) and related parts as follows:

(a) If removed, tap dowel pin (14) into thumb latch (15). Top of dowel pin (14) should be flush with outer surface of thumb latch (15).

(b) Start spring pin (13) into thin flange of groove in handle (11).

(c) Install spring (16) in locating hole of handle (11).

(d) Install thumb latch (15) with dowel pin (14) through hole in groove.

(e) Drive spring pin (13) through thumb latch (15) and into other side of handle (11) until flush with edge.

(f) Drive dowel pins (17) through holes in side of handle (11). Top of dowel pins (17) should be flush with outer surface of handle (11).

(26) Position washers (12) on dowel pins of handle (11). Dowel pins (17) fit through small hole in washers (12).

(27) Install handle (11) as follows:

(a) Depress thumb latch (15) and hold. Align dowel pins (17) in slots of nozzle body (46) and slide handle (11) into nozzle body (46).

(b) Put handle (11) in FLOW (on) position.

(c) Align holes in handle (11) with holes in nozzle body (46). Thread one hinge pin (10) into each hole and tighten to a torque of 8-10 ft-lbs (10-14 Nm).

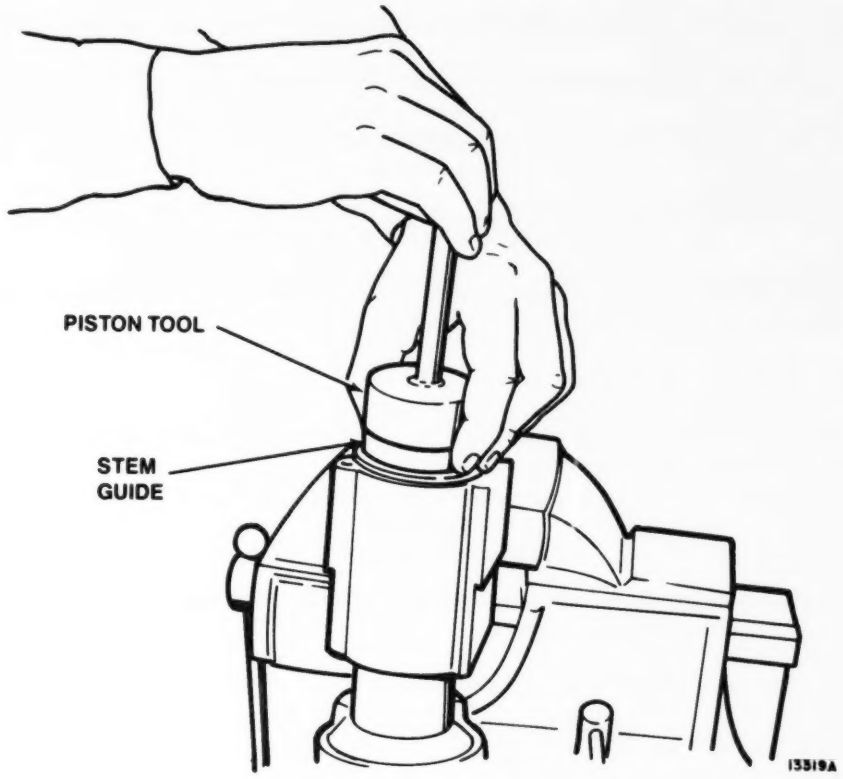


Figure 5-9. Stem Guide Installation

CAUTION

Do not use an extender or cheater bar with piston torque tool. Failure to comply can result in damage to parts.

(28) Slide piston (9) into stem guide (22) and thread on end of stem (21). Tighten piston (9) using piston torque tool.

(29) Remove stem tool as follows:

(a) Put handle (11) in no flow (off) position.

(b) Push up on pullback sleeve (27) while holding stem tool until latches (25) release stem tool.

(c) Pull stem tool out of nozzle body (46).

(d) Put handle (11) in FLOW (on) position.

(30) Place spring (4) on end of piston (9).

(31) If removed, install retaining ring (7) on end of indicator shaft (6).

(32) Slide flat washer (8) and spring (5) over indicator shaft (6) and against retaining ring (7).

(33) Insert indicator shaft (6) through center hole of end cap (3).

NOTE

Painted groove on indicator shaft must extend through back of end cap.

(34) Install end cap (3) as follows:

(a) Push indicator shaft (6) through inside of end cap (3) and hold end of indicator shaft (6) against outside of end cap (3).

(b) Align end cap (3) lugs with nozzle body (46) and press down to compress spring (4). Hold end cap (3) against nozzle body (46).

(c) Release indicator shaft (6).

(d) Thread capscrews (2) into nozzle body (46) and tighten to a torque of 10-15 ft-lbs (14-21 Nm).

(35) Install seal (1) as follows:

(a) Turn nozzle body (46) in vise so that outlet end is pointing up.

(b) Push down on pullback sleeve (27) until release pins (29) engage.

(c) Put handle (11) in no flow (off) position.

(d) Install seal (1) in forward groove of patch adapter (33) with spring facing toward inside of nozzle body (46).

(36) Remove nozzle subassembly (12, Figure 5-1) from vise.

(37) Install o-ring (10) and strainer (9) in strainer housing (11).

(38) Thread strainer body (8) and coupling (7) into strainer housing (11). Hand-tighten only.

(39) If coupling (7) was removed from strainer body (8) install as follows:

(a) Using a brass brush, clean threads to remove old thread sealing compound.

(b) Apply a light, even coat of thread sealing compound to threads of coupling (7).

CAUTION

Do not over tighten strainer body. Failure to comply can result in damage to strainer body.

(c) Thread coupling (7) into strainer body (8) until one to three threads are exposed. Wipe off excess thread sealing compound.

NOTE

Final assembly of nozzle is done after testing.

f. Testing.

WARNING

Calibrating fluid, MIL-C-7024 Type II, is toxic to skin, eyes, and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged contact. Good general ventilation is normally enough.

High pressures used during testing may cause rupturing or bursting of faulty hoses and result in serious injury. To prevent injury, cover hoses with a suitable safety shield. Be sure pressures are bled off before exposing or touching hoses.

CAUTION

Failure of any test is cause for rejection of nozzle assembly until fault is corrected. Refer to Troubleshooting, Table 5-1, to determine probable cause of failure.

If strainer housing or coupling threads leak, tighten one thread. Do not over tighten. Failure to comply can result in damage to parts.

(1) Prepare nozzle subassembly for testing as follows:

(a) Install inlet and outlet proof test adapters. (See Figure 5-10.)

(b) Put handle in FLOW (on) position.

(c) Install nozzle subassembly in test set-up.

(d) Operate pump to fill circuit with calibrating fluid and remove air. Shut off pump.

(2) With handle in FLOW (on) position, test nozzle subassembly as follows:

(a) Operate pump to produce an inlet pressure of 10 psig (69 kPag).

(b) Hold pressure for a minimum of one minute. During the first 30 seconds pressure reading may drop a maximum of 5 psi (34 kPa). During last 30 seconds there shall be no pressure drop or leakage.

(c) Increase inlet pressure to 150 psig (1034 kPag) and hold for three minutes. There shall be no leakage. Outlet pressure shall not exceed 40 psig (276 kPag).

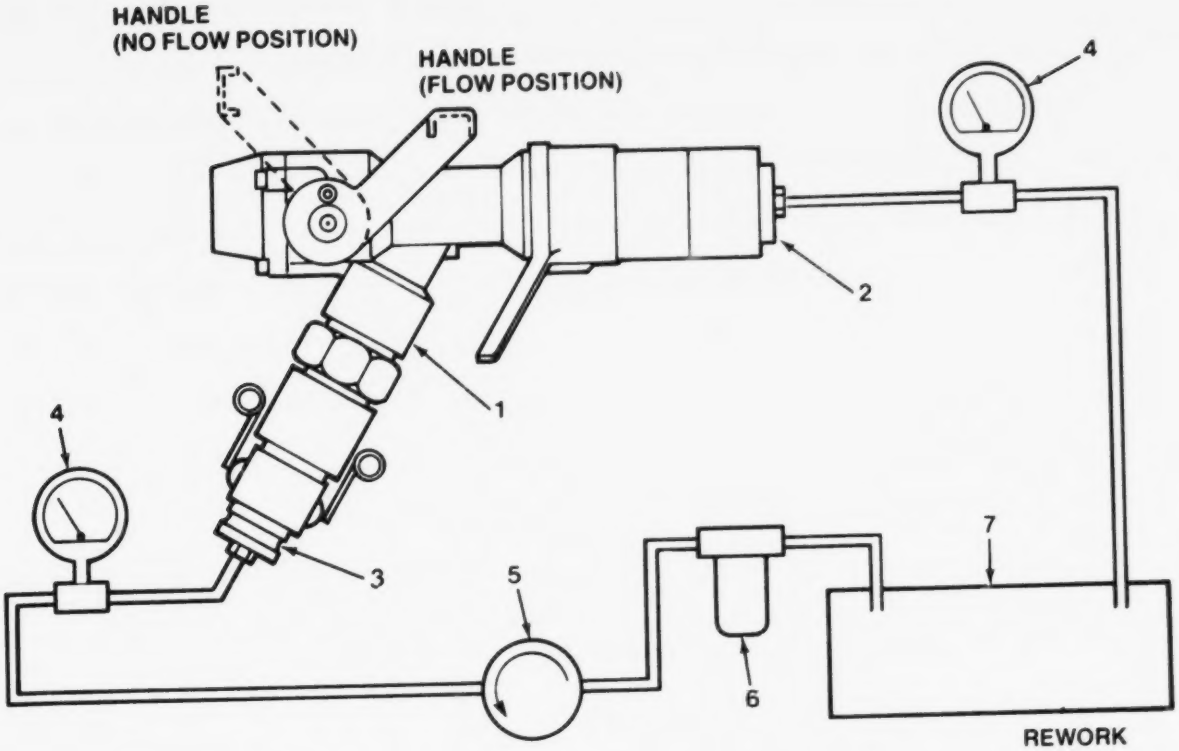
NOTE

Indicator shaft should extend when pressure exceeds 20 psig (138 kPag).

(d) Shut off pump and allow pressure to return to zero.

(3) With handle in no flow (off) position, test nozzle subassembly as follows:

(a) Operate pump to produce an inlet pressure of 150 psig (1034 kPag).



1. NOZZLE ASSEMBLY
2. PROOF TEST ADAPTER, OUTLET } SEE NOTE 1.
3. PROOF TEST ADAPTER, INLET
4. PRESSURE GAUGE, 0-300 PSIG. SEE NOTE 2.
5. HYDRAULIC PUMP, 0-300 PSIG
6. FILTER, 15 MICRON
7. FLUID RESERVOIR, 10-20 GALLON. SEE NOTE 3.

NOTES:

1. 3/4" NPT TAPPED HOLE IN BOTH ADAPTERS FOR HOSE CONNECTIONS
2. OUTLET PRESSURE GAUGE CAN BE 0-50 PSIG.
3. USE CALIBRATING FLUID

13338A

Figure 5-10. Closed Circuit Refueling (CCR) Nozzle Assembly Test Setup

(b) Hold pressure for a minimum of one minute. There shall be no pressure indicated at outlet end.

NOTE

Extend indicator shaft pin during this test.

(c) Shut off pump and allow pressure to return to zero.

(d) Disconnect outlet hose and remove outlet proof test adapter.

(e) Operate pump to produce an inlet pressure of 10 psig (69 kPag).

(f) Hold pressure for one minute. There shall be no flow from outlet or signs of leakage.

(g) Shut off pump and allow pressure to return to zero.

(4) Remove nozzle subassembly from test setup.

(5) Drain calibrating fluid into a suitable container.

(6) Remove inlet proof test adapter.

(7) Wipe exterior of nozzle subassembly with a clean cloth to remove calibrating fluid.

(8) Fill in rework label data, peel off backing, and attach to nozzle body.

(9) Complete assembly of nozzle subassembly (12, Figure 5-1) as follows:

(a) Insert capscrew (1) through hole in ring terminals of ground clip assembly (2) and ground plug assembly (3).

(b) Thread capscrew (1) into nozzle subassembly (12) and tighten.

(c) Install ring (6) in nozzle subassembly (12).

(d) Install outlet cap assembly (4) on nozzle subassembly (12). Attach wire rope to ring (6).

(e) Install dust plug (5) in coupling half (7). Attach wire rope to ring (6).

(10) Test nozzle assembly for electrical continuity using a multimeter. Resistance shall not exceed 10 ohms when tested at the following points:

(a) Latches in outlet end to ground plug.

(b) Latches in outlet end to ground clip.

(c) Latches in outlet end to coupling arms.

5-4. Preparation For Storage of Shipment.

a. Coil wire rope of ground clip assembly (2) and ground plug assembly (3). Secure with masking tape.

b. Wipe nozzle with a clean cloth.

c. Inspect nozzle for damaged or missing parts. Report any problems to your supervisor.

d. Place nozzle in water-vaporproof bag. Tape or seal bag.

e. Place cushioning material and nozzle in fiberboard container.

f. Add cushioning material to fiberboard container to prevent movement of nozzle.

g. Seal lid of container with masking tape.

h. Mark the following information on outside of container.

(1) Description.

(2) Part Number.

(3) National Stock Number.

(4) Serial Number.

(5) Date packaged.

(6) Date repaired (if applicable).

i. Store container in an area protected from extreme weather conditions such as; heat, rain, snow, humidity, sand, and direct sunlight.

5-5. Administrative Storage.

a. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept.

b. Before placing equipment in administrative storage, complete current maintenance services and equipment serviceable criteria (ESC) evaluations, correct shortcomings and deficiencies, and apply all modification work orders (MWO's).

c. Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, use trucks, vans, conex containers, and other containers.

APPENDIX A

REFERENCES

A-1. Scope. This appendix lists all forms, field manuals, technical publications, and miscellaneous publications referenced in this manual.

A-2. Forms.

Equipment Daily or Monthly Log ..... DA Form 2408-1
Equipment Inspection and Maintenance Work Sheet ..... DA Form 2404
Maintenance Request ..... DA Form 2407
Quality Deficiency Report ..... SF 368
Recommended Changes to DA Publications and Blank Forms ..... DA Form 2028-2
Uncorrected Fault Record ..... DA Form 2408-14
Component Removal and Repair/Overhaul Record ..... DA Form 2410
Aircraft Component Historical Record ..... DA Form 2408-16

A-3. Technical Manuals.

Procedures For Destruction of Army Equipment to Prevent Enemy Use ..... TM 750-244-3
Aviation Maintenance Quality Assurance/Quality Control ..... TM 55-0411
The Army Maintenance Management System (TAMMS) ..... DA PAM 738-750
Painting Instructions for Army Material ..... TM 43-0139

A-4. Miscellaneous Publications.

Expendable/Durable Items ..... CTA 50-970
Classification, Reclassification, Maintenance, Issuance, and Reporting of Maintenance Training Aircraft ..... AR 700-42
Report of Discrepancy (ROD) SF-364

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General.

a. This appendix provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II appoints overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the appointed maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions. Maintenance functions will be limited to and are defined as follows:

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel).

b. *Test.* To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operation required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replace fuel, lubricants, chemical fluids, or gases.

d. *Adjust.* To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. *Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. *Remove/Install.* To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. *Replace.* To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3rd position code of the SMR code.

i. *Repair.* The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore

serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e. DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. Explanation of Columns in MAC, Section II.

a. Column (1) - Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "01".

b. Column (2) - Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column (3) - Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 3. (For detailed explanation of these functions, see paragraph B-2).

d. Column (4) - Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform the maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault isolation time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C - Operator or Crew

O - Unit Maintenance

F - Intermediate Direct Support Maintenance

H - Intermediate General Support Maintenance

L - Specialized Repair Activity (SRA)

D - Depot Maintenance

e. Column (5) - Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools), and special tools, TMDE, and support equipment required to perform the designated function.

f. Column (6) - Remarks. This column shall, when applicable, contain a letter code, in alphabetical order, which shall be keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. *Column (1) - Reference Code.* The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. *Column (2) - Maintenance Category.* The lowest category of maintenance authorized to use the tool or test equipment.

c. *Column (3) - Nomenclature.* Name or identification of the tool or test equipment.

d. *Column (4) - National Stock Number.* The National Stock Number of the tool or test equipment.

e. *Column (5) - Tool Number.* The manufacturer's part number.

B-5. Explanation of Columns in Remarks, Section IV.

a. *Column (1) - Reference Code.* The code recorded in column 6, Section II.

b. *Column (2) - Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools & Equipment	(6) Remarks
			Unit		Intermediate		Depot		
			C	O	F	H	D		
00	Closed Circuit Refueling Nozzle	Inspect	.3						
		Repair			1.2			1 thru 11	A, C
		Replace			.2				
01	Nozzle Assembly	Inspect	.3						
		Repair			1.2			1 thru 11	A, B, C
		Replace			.2				
0101	Ground Clip Assembly	Inspect	.1						
		Test		.1				11	
		Repair		.5					A
		Replace		.3					
0102	Ground Plug Assembly	Inspect	.1						
		Test		.1				11	
		Repair		.5					A
		Replace		.3					
0103	Inlet Assembly	Inspect	.1						
		Repair		.3					A
		Replace		.2					
0104	Outlet Cap Assembly	Inspect	.1						
		Repair		.3					A
		Replace		.2					
0105	Nozzle Subassembly	Inspect	.2						
		Repair			1.0			1, 2, 3, 4	A, B, C
		Replace			.2				
		Test			.5			5 thru 11	A, C

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

Tool or Test Equipment Reference Code	Maintenance Category	Nomenclature	National/NATO Stock Number	Tool Number
1	F	Piston Tool		125-17120
2	F	Stem Tool		125-17140
3	F	Spanner Wrench		125-17160
4	F	Regulator Tool		125-17130
5	F	Outlet Proof Test Adapter		125-17150
6	F	Inlet Proof Test Adapter		125-17151
7	F	Pressure Gauge (0-300 psig)		
8	F	Hydraulic Pump (0-300 psig)		
9	F	15 Micron Filter		
10	F	Fluid Reservoir (10-20 gallon)		
11	F	Multimeter		

Section IV. REMARKS

A - Requires common tools from automotive shop set.
B - Requires major repair kit.
C - Tools 1 through 7 contained in tool kit 125-17102.

OPERATORS, UNIT, AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL AND REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

C-1. SCOPE. This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of Unit and Intermediate Direct Support Maintenance of the Closed Circuit Refueling (CCR) Nozzle Assembly. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C-2. GENERAL. In addition to this section, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s).

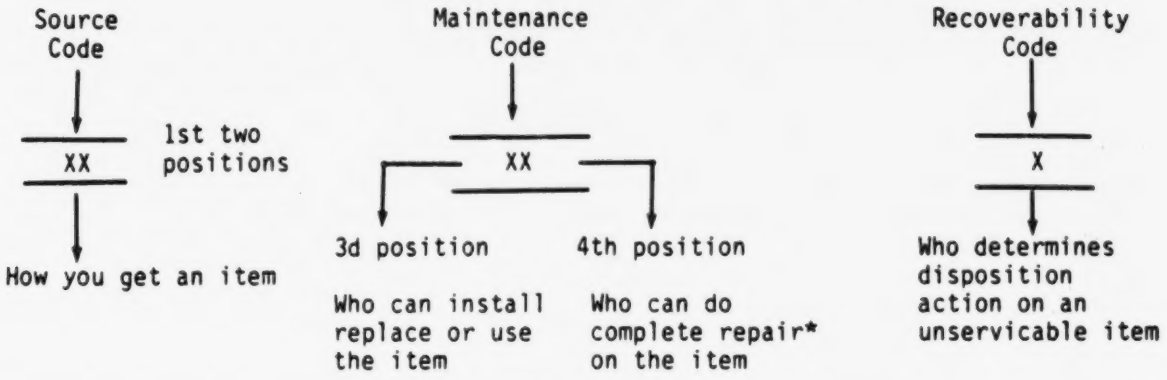
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV. Cross-references Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item number in alphanumeric sequence and cross-references NSN, FSCM and part number.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA PB PC** PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code. **NOTE: Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

	Explanation
MO--(Made at org. AVUM Level MF--(Made at DS/ AVUM Level MH--(Made at GS Level) ML--Made at Specialized Repair Activity (SRA)) MD--(Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.

Code	Explanation
AO--(Assembled by org/AVUM Level) AF--(Assembled by DS/AVIM Level) AH--(Assembled by GS Category) AL--(Assembled by SRA) AD--(Assembled by Depot)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance.

Code	Explanation
XA--Do not requisition an "XA"-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)	
XB--If an "XB" item is not available from salvage, order it using the FSCM and part number given.	
XC--Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.	
XD--Item is not stocked. Order an "XD"-coded item through normal supply channels using the FSCM and part number given, if no NSN is available.	

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tells you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C	--Crew or operator maintenance done within organizational or aviation unit maintenance.
O	--Organizational or aviation unit category can remove, replace, and use the item.
F	--Direct support or aviation intermediate level can remove, replace, and use the item.

H --General support level can remove, replace, and use the item.

L --Specialized repair activity can remove, replace, and use the item.

D --Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes. This position will contain one of the following maintenance codes.

Code	Application/Explanation
O	--Organizational or (aviation unit) is the lowest level that can do complete repair of the item.
F	--Direct support or aviation intermediate is the lowest level that can do complete repair of the item.
H	--General Support is the lowest level that can do complete repair of the item.
L	--Specialized repair activity is the lowest level that can do complete repair of the item.
D	--Depot is the lowest level that can do complete repair of the item.
Z	--Nonreparable. No repair is authorized.
B	--No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Codes	Application/Explanation
Z	--Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.

Recoverability Codes	Application/Explanation
O	--Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit level.
F	--Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	--Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	--Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	--Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	--Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. PART NUMBER (Column (4)). Indicates the primary number used by the manufacturer, (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. DESCRIPTION AND USABLE ON CODE (UOC) (Column (5)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The physical security classification of the item is indicated by the parenthetical entry, e.g., Phy Sec C1 - Confidential, Phy Sec C1 (S) - Secret, Phy Sec C1 (T) - Top Secret.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see paragraph 5, Special Information).

(8) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

(10) The indenture, shown as dots appearing before the repair part, indicates that the item is a repair part of the next higher assembly.

f. QTY (Column (6)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and may vary from application to application.

C-4. EXPLANATION OF COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) **STOCK NUMBER column.** This column lists the NSN by National item identification number

(NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e. $\overbrace{(5305\text{-}\underbrace{01\text{-}574\text{-}1467}_{\text{NIIN}})}^{\text{NSN}}$.

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) **FIG. column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

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(3) **ITEM column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) **FSCM column.** The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) **PART NUMBER column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) **STOCK NUMBER column.** This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and FSCM columns to the left.

(4) **FIG. column.** This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) **ITEM column.** The item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

c. FIGURE AND ITEM NUMBER INDEX.

(1) **FIG. column.** This column lists the number of the figure where the item is identified/located in Section II and III.

(2) **ITEM column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) **STOCK NUMBER column.** This column lists the NSN for the item.

(4) **FSCM column.** The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(5) **PART NUMBER column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

C-5. SPECIAL INFORMATION.

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown as "UOC:....." in the Description Column (justified left) on the last line applicable item description/nomenclature. Uncoded items are applicable to all models.

b. ASSOCIATED PUBLICATIONS. Not Applicable.

C-6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is NOT known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number or Part Number is Known:

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see 4a(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see paragraph 4b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

C-7. ABBREVIATIONS. Abbreviations used in this manual are listed in MIL-STD-12.

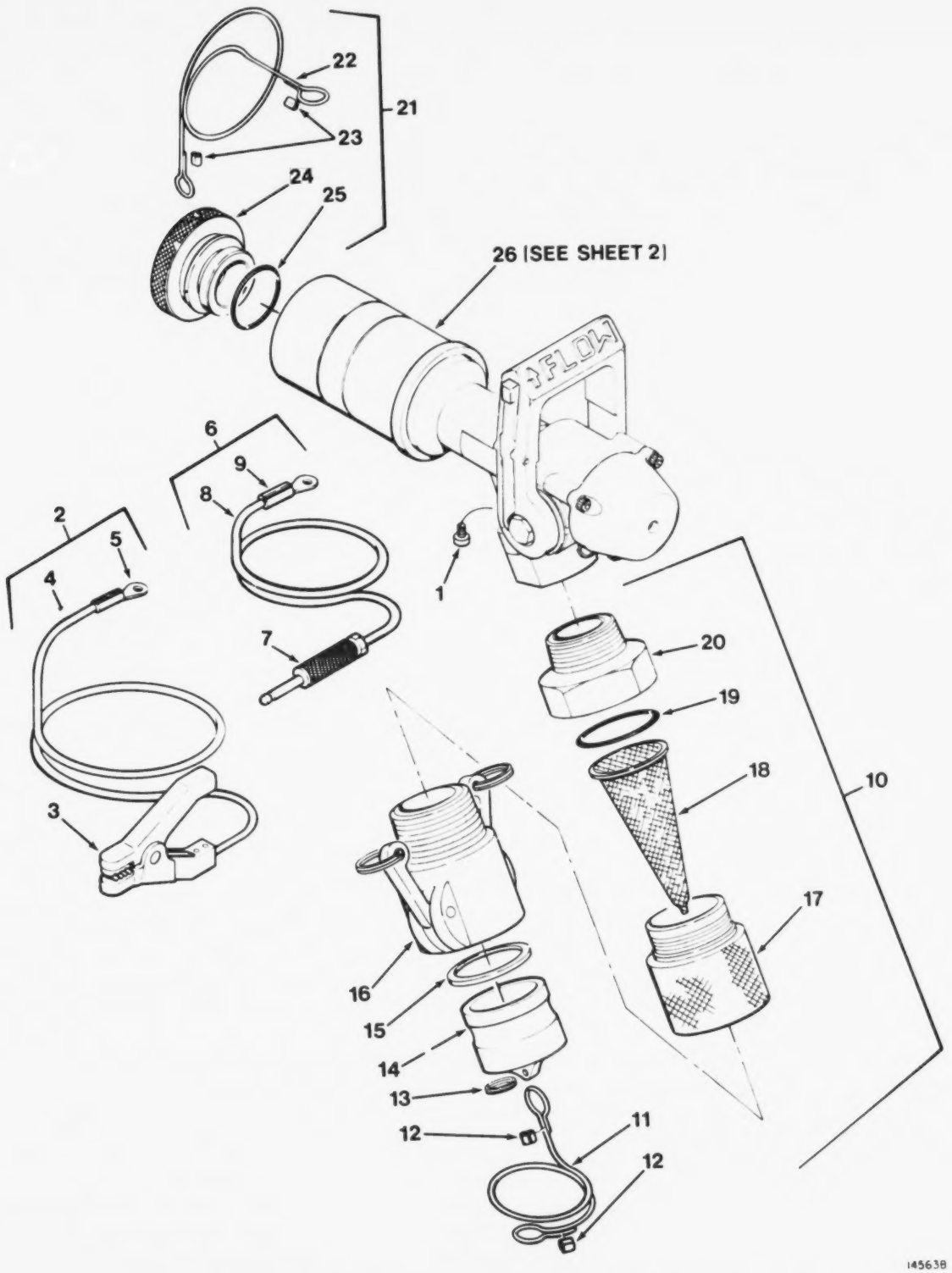


Figure 1. Closed Circuit Refueling (CCR) Nozzle Assembly (Sheet 1 of 2)

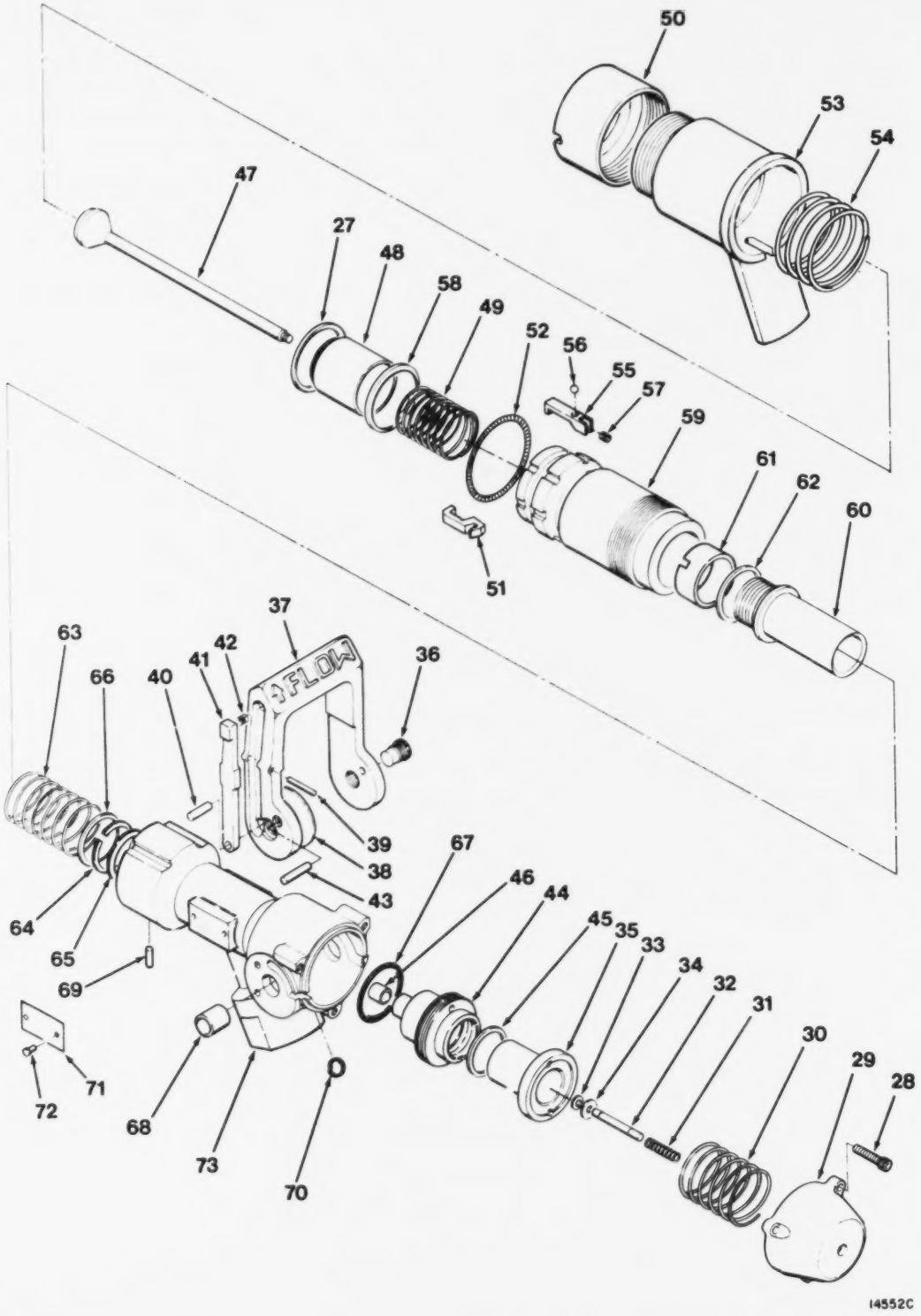


Figure 1. Closed Circuit Refueling (CCR) Nozzle Assembly (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 01 NOZZLE ASSEMBLY	
				FIGURE 1 CLOSED CIRCUIT REFUELING (CCR) NOZZLE ASSEMBLY	
1	PAOZZ	96906	MS16995-35	.SCREW,CAP,SOCKET HE.....	1
2	XDOFF	79657	125-20000	CLIP ASSY,GROUND.....	1
3	PAOZZ	81349	MIL-C-83413/7	.CLAMP,ELEC,GND.....	1
4	MOOZZ	79657	125-27002	WIRE,ELECTRICAL MAKE FROM BULK MATERIAL,P/N 125-17050 (FSCM 79657) 180 IN REQ.....	1
5	PAOZZ	79657	125-27003	.TERMINAL,RING.....	1
6	XDOFF	79657	125-30000	PLUG ASSY,GROUND.....	1
7	PAOZZ	96906	MS3493-1	.PLUG.....	1
8	MOOZZ	79657	125-37002	.WIRE,ELECTRICAL MAKE FROM BULK MATERIAL,P/N 125-17050(FSCM 79657) 60 IN REQUIRED.....	1
9	PAOZZ	79657	125-27003	.TERMINAL,RING.....	1
10	XDOOF	97403	13219E0486	INLET ASSY,NOZZLE.....	1
11	MOOZZ	79657	125-47008	.ROPE,WIRE MAKE FROM BULK MATERIAL P/N 125-17051,(FSCM 79657)16 IN REQ.	1
12	PAOZZ	76691	168-3-VC	SWAGING SLEEVE,WIRE.....	2
13	XDOZZ	84256	19-4CD	.RING.....	3
14	PAOZZ	96906	MS27029-11	.PLUG,QUICK DISCONNE.....	1
15	PAOZZ	96906	MS27030-6	.GASKET.....	1
16	PAOZZ	96906	MS27026-11	.COUPLING HALF,QUICK.....	1
17	XDOZZ	97403	13219E0482	.BODY,STRAINER.....	1
18	PAOZZ	97403	13219E0484	.STRAINER ELEMENT,SE PART OF KIT P/N 125-17101.....	1
19	PAOZZ	96906	MS29513-226	.PACKING,PREFORMED.....	1
20	XDOZZ	97403	13219E0485	.HOUSING,STRAINER.....	1
21	XDOOO	79657	125-50000	CAP ASSY,OUTLET.....	1
22	MOOZZ	79657	125-47008	.ROPE,WIRE MAKE FROM BULK MATERIAL P/N 125-17051,(FSCM 79657)16 IN REQ.	1
23	PAOZZ	76691	168-3-VC	.SWAGING SLEEVE,WIRE.....	1
24	PBOZZ	79657	125-54003	.CAP,DUST.....	1
25	PAOZZ	96906	MS29513-130	.PACKING,PREFORMED.....	1
26	XDFZZ	79657	125-00000	NOZZLE SUBASSY.....	1
27	KFFZZ	79657	125-17035	.SEAL,PLAIN PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
28	PAFZZ	96906	MS16995-52	.SCREW,CAP,SOCKET HE.....	3
29	XDFZZ	79657	125-10002	.CAP, END.....	1
30	XDFZZ	79657	125-17023	.SPRING,HLCPS.....	1
31	XDFZZ	79657	125-17025	.SPRING,HLCPS.....	1
32	XDFZZ	79657	125-14017	.SHAFT,INDICATOR.....	1
33	PAFZZ	96906	MS16633-4025	.RING,RETAINING.....	1
34	PAFZZ	96906	MS15795-809	.WASHER,FLAT.....	1
35	XDFZZ	79657	125-14010	.PISTON.....	1
36	XDFZZ	79657	125-17012	.PIN,HINGE.....	1
37	XDFZZ	79657	125-10003	.HANDLE.....	1
38	KFFZZ	79657	125-16038	.WASHER,NONMETALLIC PART OF KIT P/N	2

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				125-17101.....	
39	PAFZZ	96906	MS16562-225	.PIN,SPRING.....	1
40	PAFZZ	96906	MS16556-640	.PIN,STRAIGHT,HDLS.....	1
41	PBFZZ	79657	125-11014	.LATCH,THUMB.....	1
42	PBFZZ	79657	125-17027	.SPRING,HLCPS.....	1
43	PAFZZ	96906	MS16556-649	.PIN,STRAIGHT,HDLS.....	2
44	XDFZZ	79657	125-14009	.GUIDE,STEM.....	1
45	KFFZZ	79657	125-17033	.SEAL,PLAIN PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
46	KFFZZ	79657	125-17019	.BUSHING,STEM PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
47	XDFZZ	79657	125-12011	.STEM,VALVE.....	1
48	KFFZZ	79657	125-13007	.SLEEVE,SAFETY PART OF KIT P/N 125-17101.....	1
49	XDFZZ	79657	125-17020	.SPRING,HLCPS.....	1
50	PBOZZ	79657	125-13005	.SLEEVE,NOSE.....	1
51	PBFZZ	79657	125-15015	.LATCH SET PART OF KIT P/N 125-17101	6
52	PBFZZ	79657	125-17018	.SPRING,ENDLESS.....	1
53	XDFZZ	79657	125-13004	.SLEEVE,PULL-BACK.....	1
54	XDFZZ	79657	125-17021	.SPRING,HLCPS.....	1
55	PBFZZ	79657	125-15016	.PIN,RELEASE PART OF KIT P/N 125-17101.....	2
56	KFFZZ	96906	MS19060-18	.BALL,BEARING PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	2
57	PBFZZ	79657	125-17026	.SPRING,HLCPS PART OF KIT P/N 125-17101.....	1
58	KFFZZ	79657	125-17028	.SEAL,PLAIN PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
59	XDFZZ	79657	125-13006	.ADAPTER,LATCH.....	1
60	XDFZZ	79657	125-13008	.SLEEVE,PRESS RGLTR.....	1
61	XDFZZ	79657	125-13031	.RING,BACKUP,RGLTR.....	1
62	KFFZZ	79657	125-17029	.SEAL,PLAIN PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
63	XDFZZ	79657	125-17022	.SPRING,HLCPS.....	1
64	PAFZZ	96906	MS16627-4156	RING,RETAINING.....	1
65	KFFZZ	79657	125-17030	.SEAL,PLAIN PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.....	1
66	XDFZZ	79657	125-13049	RING,BACK-UP.....	1
67	KFFZZ	96906	MS29513-128	.PACKING,PREFORMED PART OF KIT P/N 125-17100 PART OF KIT P/N 125-17101.	1
68	KFFZZ	79657	125-17013	.BUSHING,HINGE PART OF KIT P/N 125-17101.....	1
69	XDFZZ	96906	MS16562-219	.PIN,SPRING..... UOC:EKH	1
70	PAOZZ	84256	19-4CD	.RING.....	1
71	XDOZZ	79657	125-17050	.PLATE, ID.....	1
72	XDOZZ	79657	125-17051	.RIVET.....	2
73	XDFZZ	79657	125-10001	.BODY,NOZZLE.....	1
	PAFZZ	79657	125-17100	REPAIR KIT,MINOR.....	1
				BALL,BEARING (2) 1-56	
				BUSHING,STEM (1) 1-46	
				PACKING,PREFORMED (1) 1-67	

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)			(6) QTY
				SEAL,PLAIN	(1)	1-58	
				SEAL,PLAIN	(1)	1-62	
				SEAL,PLAIN	(1)	1-65	
				SEAL,PLAIN	(1)	1-45	
				SEAL,PLAIN	(1)	1-27	
	PAFZZ	79657	125-17101	REPAIR KIT,MAJOR.....			1
				BALL,BEARING	(2)	1-56	
				BUSHING,HINGE	(1)	1-68	
				BUSHING,STEM	(1)	1-46	
				LATCH SET	(6)	1-51	
				PACKING,PREFORMED	(1)	1-67	
				PIN,RELEASE	(2)	1-55	
				SEAL,PLAIN	(1)	1-58	
				SEAL,PLAIN	(1)	1-62	
				SEAL,PLAIN	(1)	1-65	
				SEAL,PLAIN	(1)	1-45	
				SEAL,PLAIN	(1)	1-27	
				SLEEVE,SAFETY	(1)	1-48	
				SPRING,HLCPS	(1)	1-57	
				STRAINER ELEMENT,SE	(1)	1-18	
				WASHER,NONMETALLIC	(2)	1-38	

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 02 BULK MATERIALS LIST	
1	PAOZZ	81349	MIL-W-83420 TYPE II COMP B-3/32	ROPE,WIRE.....	1
2	PAOZZ	81349	MIL-W-83420 TYPE II COMP B-1/16	ROPE,WIRE.....	1

END OF FIGURE

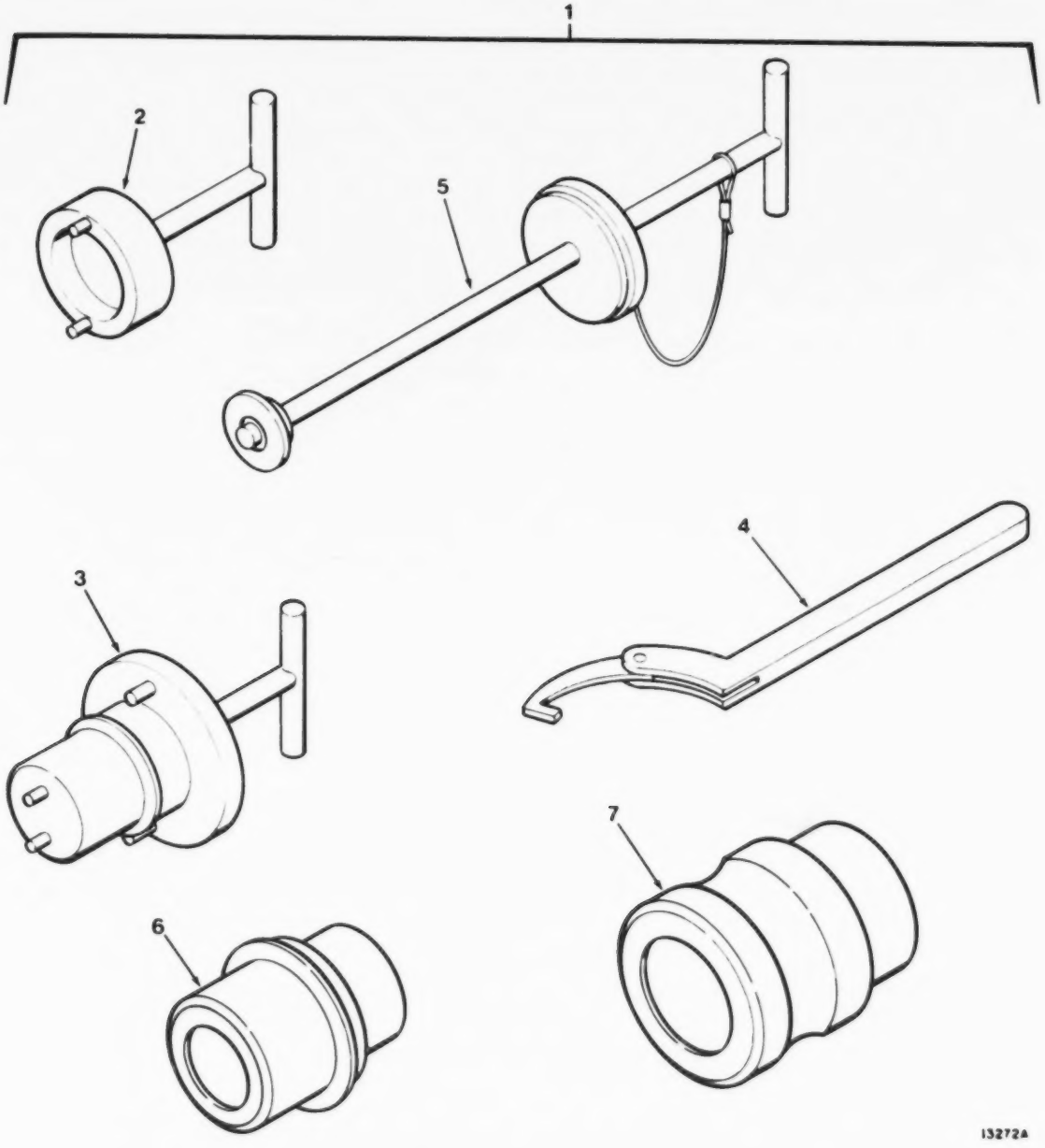


Figure 2. Special Tools

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 03 SPECIAL TOOLS AND TEST EQUIPMENT	
				FIGURE 2 SPECIAL TOOLS	
1	PDFZZ	79657	125-17102	KIT,TOOL.....	
2	PEFZZ	79657	125-17120	.TORQUE TOOL,PISTON.....	
3	PEFZZ	79657	125-17140	.TOOL,STEM INSTL.....	
4	PEFZZ	79657	17160	.WRENCH,SPANNER.....	
5	PEFZZ	79657	125-17130	.TOOL,REGULATOR INST.....	
6	PEFZZ	79657	17150	.ADAPTER, OUTLET.....	
7	PEFZZ	79657	17151	.ADAPTER, INLET.....	
				END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5935-00-007-9202	1	7
4730-00-088-9285	1	16
5330-00-263-5173	1	19
5330-00-265-1086	1	25
4730-00-504-1116	1	18
5310-00-550-5054	1	34
5330-00-612-2414	1	15
5315-00-841-4443	1	39
4730-00-915-5127	1	14
5305-00-988-7607	1	1
5305-00-988-7616	1	28
4030-01-088-6263	1	12
	1	23
5365-01-236-2084	1	64
4930-01-266-8795	1	70

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
81349	MIL-C-83413/7		1	3
81349	MIL-W-83420 TYPE II COMP B-1/16		BULK	2
81349	MIL-W-83420 TYPE II COMP B-3/32		BULK	1
96906	MS15795-809	5310-00-550-5054	1	34
96906	MS16556-640		1	40
96906	MS16556-649		1	43
96906	MS16562-219		1	69
96906	MS16562-225	5315-00-841-4443	1	39
96906	MS16627-4156	5365-01-236-2084	1	64
96906	MS16633-4025		1	33
96906	MS16995-35	5305-00-988-7607	1	1
96906	MS16995-52	5305-00-988-7616	1	28
96906	MS19060-18		1	56
96906	MS27026-11	4730-00-088-9285	1	16
96906	MS27029-11	4730-00-915-5127	1	14
96906	MS27030-6	5330-00-612-2414	1	15
96906	MS29513-128		1	67
96906	MS29513-130	5330-00-265-1086	1	25
96906	MS29513-226	5330-00-263-5173	1	19
96906	MS3493-1	5935-00-007-9202	1	7
79657	125-00000		1	26
79657	125-10001		1	73
79657	125-10002		1	29
79657	125-10003		1	37
79657	125-11014		1	41
79657	125-12011		1	47
79657	125-13004		1	53
79657	125-13005		1	50
79657	125-13006		1	59
79657	125-13007		1	48
79657	125-13008		1	60
79657	125-13031		1	61
79657	125-13049		1	66
79657	125-14009		1	44
79657	125-14010		1	35
79657	125-14017		1	32
79657	125-15015		1	51
79657	125-15016		1	55
79657	125-16038		1	38
79657	125-17012		1	36
79657	125-17013		1	68
79657	125-17018		1	52
79657	125-17019		1	46
79657	125-17020		1	49
79657	125-17021		1	54
79657	125-17022		1	63
79657	125-17023		1	30
79657	125-17025		1	31
79657	125-17026		1	57

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
79657	125-17027		1	42
79657	125-17028		1	58
79657	125-17029		1	62
79657	125-17030		1	65
79657	125-17033		1	45
79657	125-17035		1	27
79657	125-17050		1	71
79657	125-17051		1	72
79657	125-17100		1	
79657	125-17101		1	
79657	125-17102		2	1
79657	125-17120		2	2
79657	125-17130		2	5
79657	125-17140		2	3
79657	125-20000		1	2
79657	125-27002		1	4
79657	125-27003		1	5
			1	9
79657	125-30000		1	6
79657	125-37002		1	8
79657	125-47008		1	11
			1	22
79657	125-50000		1	21
79657	125-54003		1	24
97403	13219E0486		1	10
97403	13219E0482		1	17
97403	13219E0484	4730-00-504-1116	1	18
97403	13219E0485		1	20
76691	168-3-VC	4030-01-088-6263	1	12
			1	23
79657	17150		2	6
79657	17151		2	7
79657	17160		2	4
84256	19-4CD		1	13
		4930-01-266-8795	1	70

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	FSCM	PART NUMBER
BULK	1		81349	MIL-W-83420 TYPE II COMP B-3/32
BULK	2		81349	MIL-W-83420 TYPE II COMP B-1/16
1			79657	125-17100
1			79657	125-17101
1	1	5305-00-988-7607	96906	MS16995-35
1	2		79657	125-20000
1	3		81349	MIL-C-83413/7
1	4		79657	125-27002
1	5		79657	125-27003
1	6		79657	125-30000
1	7	5935-00-007-9202	96906	MS3493-1
1	8		79657	125-37002
1	9		79657	125-27003
1	10		97403	13219E0486
1	11		79657	125-47008
1	12	4030-01-088-6263	76691	168-3-VC
1	13		84256	19-4CD
1	14	4730-00-915-5127	96906	MS27029-11
1	15	5330-00-612-2414	96906	MS27030-6
1	16	4730-00-088-9285	96906	MS27026-11
1	17		97403	13219E0482
1	18	4730-00-504-1116	97403	13219E0484
1	19	5330-00-263-5173	96906	MS29513-226
1	20		97403	13219E0485
1	21		79657	125-50000
1	22		79657	125-47008
1	23	4030-01-088-6263	76691	168-3-VC
1	24		79657	125-54003
1	25	5330-00-265-1086	96906	MS29513-130
1	26		79657	125-00000
1	27		79657	125-17035
1	28	5305-00-988-7616	96906	MS16995-52
1	29		79657	125-10002
1	30		79657	125-17023
1	31		79657	125-17025
1	32		79657	125-14017
1	33		96906	MS16633-4025
1	34	5310-00-550-5054	96906	MS15795-809
1	35		79657	125-14010
1	36		79657	125-17012
1	37		79657	125-10003
1	38		79657	125-16038
1	39	5315-00-841-4443	96906	MS16562-225
1	40		96906	MS16556-640
1	41		79657	125-11014
1	42		79657	125-17027
1	43		96906	MS16556-649
1	44		79657	125-14009
1	45		79657	125-17033

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	FSCM	PART NUMBER
1	46		79657	125-17019
1	47		79657	125-12011
1	48		79657	125-13007
1	49		79657	125-17020
1	50		79657	125-13005
1	51		79657	125-15015
1	52		79657	125-17018
1	53		79657	125-13004
1	54		79657	125-17021
1	55		79657	125-15016
1	56		96906	MS19060-18
1	57		79657	125-17026
1	58		79657	125-17028
1	59		79657	125-13006
1	60		79657	125-13008
1	61		79657	125-13031
1	62		79657	125-17029
1	63		79657	125-17022
1	64	5365-01-236-2084	96906	MS16627-4156
1	65		79657	125-17030
1	66		79657	125-13049
1	67		96906	MS29513-128
1	68		79657	125-17013
1	69		96906	MS16562-219
1	70	4930-01-266-8795	84256	19-4CD
1	71		79657	125-17050
1	72		79657	125-17051
1	73		79657	125-10001
2	1		79657	125-17102
2	2		79657	125-17120
2	3		79657	125-17140
2	4		79657	17160
2	5		79657	125-17130
2	6		79657	17150
2	7		79657	17151

APPENDIX D

COMPONENTS OF END ITEM/BASIC ISSUE ITEMS

Section I. INTRODUCTION

D-1. Scope. This appendix lists components of end item and basic issue items for the CCR Nozzle Assembly to help you inventory items required for safe and efficient operation.

D-2. General. The Components of End Item/Basic Issue Items List is divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the CCR Nozzle Assembly in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the CCR Nozzle Assembly during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

D-3. Explanation of Columns. The following provides an explanation of columns found in the tabular listings.

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g. ea, in, pr).

e. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty rqr

There are no Components of End Item for the Nozzle.

Section III. BASIC ISSUE ITEMS

(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
1	N/A	Technical Manual TM5-4930-235-13&P		EA	1

APPENDIX E

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

E-1. Scope. This appendix lists additional items you are authorized for support of the CCR Nozzle Assembly.

E-2. General. This list identifies items that do not have to accompany the CCR Nozzle Assembly and do not have to be turned in with it. These items are all authorized to you by CAT, MTOE, TDA, or JTA.

E-3. Explanation of Listing.

a. National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item to you.

b. If the item you require differs between serial numbers of the same model, effective serial numbers are shown in the last line of the description. If item required differs for different models of this equipment, the model is shown under the "Usable On Code" heading in the description column.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description		(3) U M Auth	(4) Qty
	FSCM & Part Number	Usable On Code		
There are no additional authorized items for use with the Nozzle.				

APPENDIX F

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1. Scope. This appendix lists expendable/durable supplies and material needed to operate and maintain the nozzle. These items are authorized by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items).

F-2. Explanation of Columns.

a. Column (1) - Item number. This number is assigned to the entry in the listing and is referenced in the Initial Setup Tables or narrative instructions to identify the material.

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item. These are as follows:

C - Operator/Crew

O - Organizational Maintenance

F - Direct Support Maintenance

H - General Support Maintenance

D - Depot Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy the requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	C,O,F		Cloth, Lint-free MIL-C-85043	1 PK
2	O,F		Compound, Thread Sealing MIL-S-45180	1 TU
3	F	6850-00-274-5421	Solvent, Dry Cleaning, P-D-680 Type II	5 GL
4	F	6850-00-565-0810	Fluid, Calibrating, MIL-C-7024, Type II	55 GL
5	F		Cloth, Aluminum Oxide Abrasive, P-C-451	1 PK
6	F		Paint, MIL-C-46168	5 GL
7	F		Tape, Masking	1 RL
8	F		Material, Cushioning, PPP-C-843	1 PK
9	F		Bag, Water-Vaporproof, MIL-B-117	1 BX
10	F		Container, Fiber Board PPP-B-636	1 EA
11	O,F		Brush, Brass	1 EA

APPENDIX G

LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

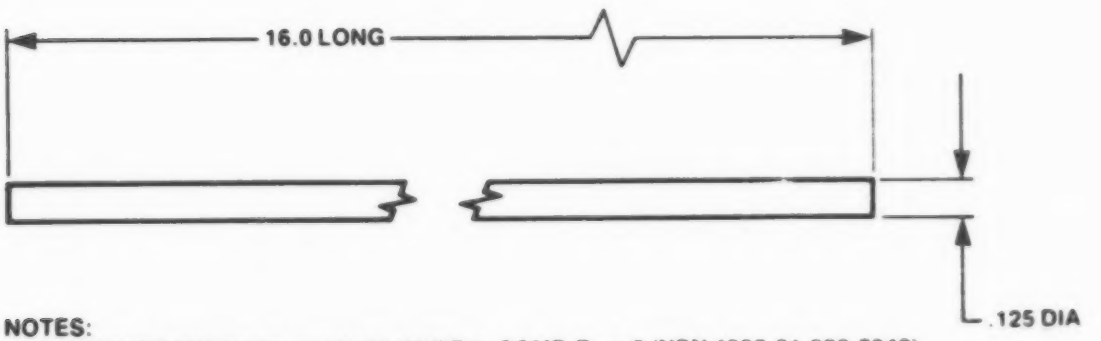
G-1. Scope. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at unit maintenance. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

G-2. Manufactured Item Part Number Index.

MIL-W-38420, Type II,Comp B-1/8 Wire Rope (Nozzle Inlet Assembly) ..... Figure 1
MIL-W-38420, Type II,Comp B-1/8 Wire Rope (Outlet Cap Assembly) ..... Figure 1
MIL-W-38420, Type II,Comp B-3/32 Wire Rope (Ground Clip Assembly) ..... Figure 2
MIL-W-38420, Type II,Comp B-3/32 Wire Rope (Ground Plug Assembly) ..... Figure 2

G-3. Manufactured Item Illustrations. See Figures 1 and 2.

Section II. MANUFACTURED ITEMS



NOTES:
1. FABRICATE FROM MIL-W-38420, TYPE II, COMP. B - 1/8 (NSN 4935-01-030-5940)
2. ALL DIMENSIONS ARE IN INCHES.

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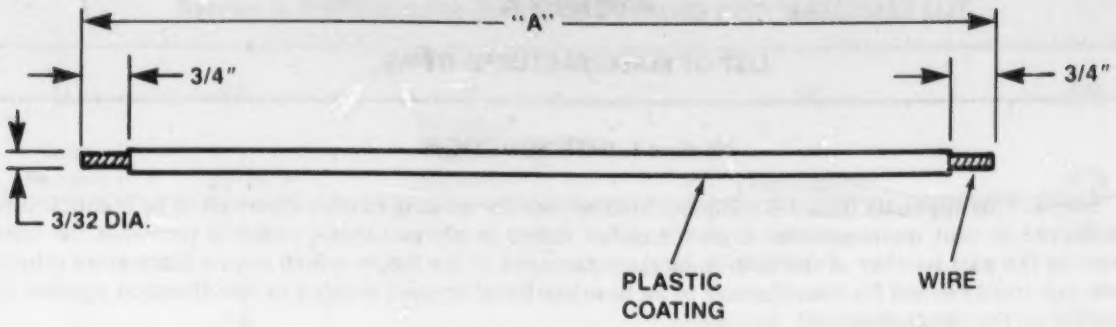
Figure 1. Wire Rope



NOTES:
1. FABRICATE FROM MIL-W-38420, TYPE II, COMP. B - B/32 (NSN 4935-01-030-5961).
2. ALL DIMENSIONS IN INCHES
3. DIMENSION "A":
   GROUND CLIP ASSEMBLY: 180 INCHES
   GROUND PLUG ASSEMBLY: 60 INCHES

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Figure 2. Wire Rope

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By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator, Unit, Direct Support and General Support Maintenance requirements for Nozzle Assembly, Closed Circuit, Refueling (CCN-101/14).

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COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

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TM-4930-235-13&P	16 Aug 88	Closed Circuit Refueling Nozzle Assembly

BE EXACT. . . PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylinders. The engine on my set only has 4 Cylinders. Change the manual to show 4 Cylinders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE John Doe
JOHN DOE

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THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL'

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 064859-000